

**IMPLICATIONS OF BIOMETRICS TECHNOLOGY IN MANAGEMENT OF
IDENTITY-BASED CONFLICTS BY THE STATE DEPARTMENT OF INTERIOR IN
NAIROBI CITY COUNTY, KENYA**

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**A Thesis Submitted in Partial Fulfillment of the Requirements for the Conferment of the
Degree of Masters of Science in Peace and Conflict Studies of Masinde Muliro University
of Science and Technology**

July, 2025

DECLARATION

DECLARATION BY THE CANDIDATE

This thesis is my original work prepared with no other than the indicated sources and support and has not been presented elsewhere for a degree or any other award.

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CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance of Masinde Muliro University of Science and Technology a report entitled “Implications of Biometrics Technology in the Management of Identity-Based Conflicts in Nairobi City County, Kenya.”

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DEDICATION

This thesis is dedicated to the Almighty God, who gave me the physical and mental strength to undertake and accomplish this task, to my beloved wife Rosemary Awino and my daughters Faith, Patience and Angel who constantly encouraged and prayed for me.

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ABSTRACT

Nairobi being a highly populated and cosmopolitan city has faced personal identification challenges due to the influx of people from other countries, impersonation, increased criminal activities, identification of disaster victims, urban refugees, and asylum seekers, and lack of identification documents. The problem of the study was the identification crisis and challenges due to the influx of people into Nairobi City County. The overall objective of this study was to examine the implications of biometrics technology in the management of identity-based conflicts in Nairobi City County, Kenya. The specific objectives were to: identify the nature and extent of identity-based conflicts in Nairobi; examine the effectiveness of biometric modalities used in the management of identity-based conflicts in Nairobi; assess the challenges and opportunities of biometric modalities employed in the management of identity-based conflicts in Nairobi. The research was guided by Conflict Theory and Diffusion of Innovation Theory. The research used descriptive design which is key in increasing the researcher's familiarity with the problem, gathering information about practical problems, clarifying concepts and formulating a problem for more precise investigation. The researcher targeted a population of 300 respondents; National Government Administration Officers (NGAO) 30, Police officers 20, Registration Officers 30, Forensic officers 10, Fingerprint Officers 80, Huduma Centre staff 60, National Hospital Insurance Fund (NHIF) Data officers 30, Independent Electoral and Boundaries Commission (IEBC) Officers 20, Identity Conflict victims 20 spread across Nairobi City County. A quota sampling technique was used based on the officers dealing with biometrics, grouped into series and a minimum number was selected for each set. In addition, purposive sampling was employed and snowball sampling was used to get information from the victims of identity-based conflicts. The sample size was 171. The study utilized both primary and secondary data. Primary data focused on the use of questionnaires, and observation checklists for officers dealing with biometrics and in-depth interviews for identity-based conflict victims. Secondary data was obtained from journals and books. Data analysis was done by use of qualitative and quantitative techniques. The Statistical Package for Social Scientists version was used to analyze the data and presented in tables. The study revealed fraud, impersonation, political conflicts, terrorism and cadavers were major sources of identity-based conflicts in Nairobi. Biometrics used in place included fingerprints, face recognition, Deoxyribonucleic Acid (DNA), iris and signature. The study revealed that biometrics offered solutions to the timely provision of identification documents and uniquely identifying individuals within Nairobi City County by 51.5% hence solving the identity-based conflict. The study revealed that 40% of government agencies mainly use fingerprints as a key biometric modality in managing identity-based conflicts. Although the Immigration and Registration Act CAP 107 authorizes the use of biometrics in Kenya as a single source of truth on personal identity, 53.33% of respondents argued that the government does not have a clear policy on the use of biometrics. The study concludes that biometrics is effective in the management of identity-based conflicts in Nairobi. The study recommends that stakeholder consultative processes be adopted to seek further ways of strengthening existing policies. Furthermore, a biometrics body be formed to encourage research and informed decisions in terms of biometric use in identity-based conflicts. This will help in identifying the loopholes that cause identity-based conflicts and formulate protection mechanisms in service deliveries through the use of biometrics. It further recommends that the government incorporates other biometric modalities such as iris and DNA in personal identification.

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ABBREVIATIONS AND ACRONYMS

AFIS	:	Automated Fingerprint Identification System
DNA	:	Deoxyribonucleic Acid
DCI	:	Directorate of Criminal Investigation
FBI	:	Federal Bureau of Investigation
GOK	:	Government of Kenya
IAI	:	International Association of Identification
ID	:	Identity Card
IEBC	:	Independent Electoral and Boundaries Commission
IPRS	:	Integrated Population Registration System
NACOSTI	:	National Council for Science Technology and Innovations
NDI	:	National Democratic Institute
NIST	:	National Institute of Standards and Technology
NRB	:	National Registration Bureau
NRC	:	National Research Council
NSSF	:	National Social Security Fund
NIIMS	:	National Integrated Identity Management System.
NEMIS	:	National Education Management Information System.
NGAO	:	National Government Administration Officers.
NPS	:	National Police Service.
NHIF	:	National Hospital Insurance Fund

NTSA : National Transport and Safety Authority

RAS : Refugee Affairs Secretariat

UK : United Kingdom

USA : United States of America

WBR : World Bank Report

OPERATIONAL DEFINITIONS OF KEY CONCEPTS

Biometric Identification: This is an identification based on physiological features intended to provide secure access to physical and virtual resources.

Biometrics : Biometrics refers to the scientific method of personal identification based on behavioural and physical traits such as fingerprints, iris, hand geometry and gait.

Cadavers : Dead human bodies

Conflict Management: Attempt to address the root cause of a conflict to reduce the Incidence of non-productive conflict that could result in violence and unrest in communities.

Identity : Identity is a making that focuses on traits, social relations, roles and social group memberships oriented to one's attention.

Huduma Centres: These are one-shop citizen service centers that provide National Government Services from one single location. The centers are built to enhance transparency, efficiency, and easy accessibility.

Bodaboda : Bicycle or motorcycle used as a taxi for carrying a passenger or goods.

Kipande : A colonial certificate put in a copper-plated metal chained on the necks of Kenyans during colonial times for identification.

Terrorism : This is the threatened use of force or violence against individuals or property to coerce or intimidate governments or societies often to achieve political, religious, or ideological objectives.

Identity-based conflicts: Conflicts that arise from disputed personal identification and verification of individuals

CHAPTER ONE

INTRODUCTION

This chapter presents the background to the study from the global, regional, and local perspectives on identity-based conflicts. It also states the statement of the problem, objectives of the study, research questions, justification, and scope of the study.

1.1 Background to the Study

According to Oyserman (2007), identity is a making that focuses on traits, social relations, roles, and social group memberships oriented to one's attention. These identities generate mental creations that are shaped by the contexts in which they develop and influence action. Oyserman (2007) further notes that the nature of the consequences of making self most important depends on the relationship between the aspects of self that are brought to the mind in the circumstance of the task at hand.

Conflicts, according to Abiodun (2014), are active disagreements between people with opposing opinions or principles, or fights between two or more groups of people or countries. In this context, identity-based conflict is the creation of the mind shaped by the contexts that influence actions that cause disagreements arising from disputed personal identification and verification of individuals.

According to Ratha and Bolle (2001), biometric identification is based on physiological features intended to provide secure access to physical and virtual resources. It relies on techniques that use automation recognition such as faces, fingerprints, retina, iris, hand geometry, signature, and voice. These physical observable characteristics make it a reliable solution to authenticate individuals because it recognizes unique detectable traits that can be proved beyond any legal system (Coats,

2007). Identification refers to the user claiming to be someone whom the system accepts or rejects after comparing the biometric feature with the already stored data, or the user accesses the biometric features and compares them with already stored data to determine the identity of the person.

According to the United States of America census of the year 2020, 7% of US adults, or 18 million people in the US, do not have access to identification documents proving their birth or citizenship, thereby creating an identity crisis.

Baylis *et al.* (2014) attribute the lack of proper identification documents by some people in the world to a source of identity-based conflicts.

Conflicts that arise from the identification of people at the border points are normally based on a lack of proper identification documents such as passports, that are required to authenticate those crossing the border control areas. According to Hogg (2003), identity can be conceptualized based on beliefs and perceptions that process underlying outcomes but differ in terms of assessment or manipulations. These beliefs and perceptions drive the society to protect their territories from danger from any entry of non-citizens to share or destroy their resources. The September 2011 US attack by terrorists, according to Baylis *et al.* (2014), led to the USA defining terrorists as those from outside who fake travel documents to disguise themselves with malicious intentions. These perceptions cause conflicts within countries, especially from those perceived as terrorists or criminals. The Al Shabaab of Somalia has taken the North Eastern and Coastal regions of Kenya, which borders Somalia, and also with the dominance of Islamic activities to terrorize both Somalia and Kenya among other East African countries like Uganda and Tanzania (Dowd & Raleigh, 2013). These actions of terrorism have led to worldwide counter-terrorism through personal

identification of suspected terrorists across borders. This research, therefore, seeks to examine the effectiveness of biometrics in managing identity-based conflicts emanating from the influx of people into Nairobi City County, especially the urban refugees.

Wayman (2004) explains that fraud as a source of identity conflict is where people forge identity documents to defraud genuine or true identities. Ideco (2007) opines that South Africa adopted the use of fingerprints and palms as a method of identification to curb corruption and fraud. According to Ideco (2007), the paper system of personal identification was not timely, and hard to verify and search wanted criminals' thereby delaying justice for the victims.

Impersonation, according to Reznik (2013), is where people fake identities or profiles to defraud or harm the people they have imitated. The case of Sir William Herschel (1833-1917), who was a British administrative official and a debt collector in India in 1877, is credited as the first European to use fingerprints in conflict management in the identification of Indian pensioners. During his tenure, Herschel had difficulties preventing impersonation when paying allowances to the Indian pensioners (Radha, 2004). Therefore, the study seeks to analyze the various biometric modalities used in personal identification and their effectiveness in solving identity-based conflicts.

During the electioneering period, the identification of voters is always a major challenge, which leads to identity-based conflicts and disputed elections, particularly in Africa, as explained by the World Bank Report (2015). In Nigeria's elections before the 2011 general elections, the voting system was marred by double registration of persons that led to disputed identification of voters and manipulation of electoral results to suit some individuals (NDI Report, 2011).

The Kenyan 2007-2008 election conflicts were politically motivated and based on disputed identities of voters, as echoed by Dowd and Raleigh (2013). These conflicts led to the emergence of groups based on ethnic groupings affiliated with the Party of National Unity and the Orange Democratic Party. In the zones of conflict, especially Nairobi, Rift Valley and Nyanza regions, identities based on tribe played a key role. The election system in Kenya before the 2007 elections based on the identity card of the person and the demographic data where each voter was identified manually from the main manual register also led to disputed outcomes due to impersonation.

However, a personal identification of such calibre opened loopholes for people to have multiple registrations where they could vote as many times as possible contrary to the total population (Dowd & Raleigh, 2013). In this context, therefore, there was a need to adopt a system that would address these challenges of double registration and impersonation. The study, therefore, seeks to examine the effectiveness of the biometric system adopted by Kenya in the management of personal identity conflicts in the country.

Identification of deceased persons, especially during disasters, is also a cause of conflicts particularly where one dead body is being claimed by different groups. Sudha (2013) explains that fresh bodies are more easily identified through fingerprinting compared to decomposed bodies. In cases where the dead person's biometric data was not recorded early and stored, conflicts arise especially in bomb attacks, terrorism, or murder cases that involve many people claiming ownership of one particular corpse.

Identifying genuine persons from perpetrators proves hard if the biometrics of the deceased are not stored in criminal databases. In addition, two or more parties claiming the same body become

a source of conflict that must be addressed by biometrics of the deceased compared with those of the parties in conflict to establish the lineage.

Misuse of technology is a source of identity conflicts in the world and Kenya as stated by Nye (2011). He further argues that the vulnerability of computers and the internet to cyber-attacks, cybercrime and cyber espionage could lead to security attacks through money laundering, fraud and stealing of information for personal, political or strategic reasons, hence the need for biometrics to authenticate the computer users.

1.2 Statement of the Problem

The world is facing an identity crisis arising from man-made and natural disasters, impersonation, fraud, and cyber threats which requires an infallible system of personal identification for verification and identity purposes.

Individuals' identity is proof of citizenship without which an individual cannot vote, purchase property, access higher education, or even obtain employment; further, some of those without identification documents normally disguise themselves as they engage in criminal activities, while others find themselves victims of police arrests.

According to the World Bank report of 2023 on the global identification for development challenge, approximately one billion people around the world face challenges in proving who they are thereby creating identity-based conflicts as they transact their daily businesses. The report indicates that approximately 500 million of these live in sub-Saharan Africa.

According to the Kenya National Bureau of Statistics' latest census (2019), Nairobi is a highly populated cosmopolitan city with an estimated population of 4,397,073.

Nairobi City County has faced personal identification challenges due to the influx of people from other counties, impersonation, increased criminal activities, identification of disaster victims, urban refugees, asylum seekers and lack of identification documents.

Some of the cases where Nairobi has faced identification challenges include the 1998 bombing of the American Embassy, the 2013 Westgate Mall attack and the 2019 Dusit D2 hotel attack. These cases left several people dead and created an identification crisis where the relatives of the deceased had to wait for several days before their next of kin were identified.

Computers have entered every sphere of life, including businesses, medicine, education, transport, banking, engineering, music, legal practice, military and government services. The increased use of computers has led to increased conflicts such as cybercrimes, computer fraud and identity thefts, which should only be managed through authentication via biometrics.

Conflicts in other countries, such as Somalia, have resulted to the influx of urban refugees and asylum seekers. In such cases, some want to acquire identification documents of citizenship of the particular country of interest illegally to benefit from the resources of the host country. Other refugees confined in refugee camps may escape and move to the major cities, particularly Nairobi. In this context, therefore, the researcher intended to establish how biometrics technology is used in identifying and managing conflicts arising from the movement of refugees and asylum seekers. Disasters such as floods, landslides, fire, collapse of storey buildings and terrorism may cause deaths that may leave many dead bodies unidentified or even wrongfully identified.

The magnitude of these disasters is always vast, prompting secure identification systems which require the use of biometrics to solve conflicts that arise due to the identification of persons. When many victims of tragedies occur, conflicts arise in the identification process whereby different

groups may claim a single dead body. Furthermore, some people remain unidentified because they have not been registered in the national biometric database. This further causes conflicts between the relatives of the deceased persons and the government, which could seek other methods of disposing of the unidentified dead bodies.

Kenya Vision 2030 which is the country's development plan proposes intensified application of Science, Technology, and Innovation to raise productivity and efficiency levels across the three pillars which include economic, social, and political (Kenya Vision 2030, 2014).

In this regard, therefore, biometrics is used as an innovation of technology that needs to be looked into to foster efficiency in line with Vision 2030. Therefore, research in the use of biometrics as a technology in solving conflicts will address identity-based conflicts that could arise in the process of pursuit of Vision 2030.

Okoth (2000) explains that the world view on terrorism relies on the USA 2001 September terrorist attack that caused the formulation of policies on war against terrorism in the world. The US foreign policies, according to Okoth, were reckless, especially to African countries that have caused conflicts among ethnic communities and religious extremism. The research will, therefore, establish how biometrics is used in managing conflicts arising from terrorism.

1.3 Objectives of the Study

The overall objective of this study was to examine the implications of biometrics technology in the management of identity-based conflicts in Nairobi City County. The specific objectives were:

- i. To identify the nature and extent of identity-based conflicts in Nairobi City County, Kenya

- ii. To examine the effectiveness of biometrics technology in managing identity-based conflicts in Nairobi City County
- iii. To assess the challenges and opportunities of biometrics technology encountered in identity-based conflicts in Nairobi City County

1.4 Research Questions

- i. What is the nature and extent of identity-based conflicts in Nairobi City County, Kenya?
- ii. To what extent is biometrics technology effective in managing identity-based conflicts in Nairobi City County, Kenya?
- iii. What challenges and opportunities are encountered when biometric technology is used in managing identity-based conflicts in Nairobi City County, Kenya?

1.5 Justification of the Study

Kothari and Garg (2014) describe the significance of the study as the logical contribution to a subject under investigation. The study is expected to bring out the influence of biometric technology in the enhancement of the management of identity-based conflict in Nairobi City County. It will contribute knowledge to the field of research in the implications of biometrics technology and the field of conflict management.

The biometric modalities employed in conflict management are a result of innovation in technology. The study is justified since the use of traditional methods of identification fails in terms of speed and accuracy thereby jeopardizing the full realization of conflict resolution during identity crisis.

1.5.1 Academic Justification

In the field of research, the study will contribute to the development of knowledge that will act as a reference point for studies to come. In addition to the development of theories in research, the study will bridge the gap that exists in the application of biometric systems in conflict management. According to Hawthorne (2009), traditional methods of identification such as scars, appearance, passwords, identification badges, and skin colour have all failed in the past in solving identity-based conflicts. There are also several problems associated with these methods of identification. For example, passwords and PINs can be forgotten, shared with others, and lost or stolen, which could compromise the integrity of the identification system.

Therefore, this study was justified on the premise that identity-based conflicts need identity-based solutions that are unique and more advanced compared to the traditional methods of personal identification.

1.5.2 Policy Justification

The research will be a guide to the government to initiate policies to strengthen the use of biometric identification in all sectors of the economy. This will help identify the loopholes that cause identity-based conflicts and formulate protection machinations in both service deliveries of biometric systems used in the country. The government has introduced the use of biometrics in most sectors of the economy, such as institutions of higher learning, for example, Garissa University, transport sector where the matatu and bodaboda drivers are required to register at Huduma centers countrywide and at the national hospital insurance fund to authenticate their clients and to prevent fraudulent activities. Based on the current situation of identity-based conflicts in Kenya, the study will help formulate biometric policies to improve existing policies.

1.6 Scope of the Study

The scope of the study is the venue where research will be done and the period the research commences and completes (Kothari, 2009). The study was restricted to Nairobi City County, which has a cosmopolitan set-up and is the most populous in Kenya.

The key areas of focus were the departments that deal with biometrics, which include the National Police Service, the government administration officers, Huduma Centres in Nairobi, the National Registration Bureau and its branches in Nairobi, which is mandated under CAP 107 laws of Kenya to identify, register and collect biometrics details of persons aged 18 years and above to be used by other stakeholders. The study took around four years with effect from January 2019.

1.7 Chapter Summary

This chapter has discussed the background of the study from which the statement of the problem was derived. It discussed the research objectives, research questions and justification of the study.

The next chapter is based on a literature review.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter presents the literature review of the study from global, regional, and local perspectives on development biometrics in conflict management. It also includes the historical background of biometrics and identification systems in Kenya. Further, an empirical review of the study is discussed. The chapter discusses past literature reviews and links them to the objects of the study about the independent and dependent variables to set up knowledge gaps.

2.1 Nature and Extent of Identity-Based Conflicts

Conflict, according to Thomas (2006), is defined as the disagreements through which parties involved perceive a threat to their lives, needs, interests or concerns. It is a disagreement between people with opposing needs, ideas, beliefs, values or goals. The identification of persons using the appropriate techniques is a fundamental scientific discipline used in identifying human beings and it helps in managing identity conflicts. Biometric technology, which is mainly used as a tool in crime scene investigations so far, has proven to be capable of reducing such identity conflicts.

2.1.1 Nature and Extent of Identity-Based Conflicts in the World

Leurdijk (2004) states that the US 2011 September terrorist attack opened a world view against the Al-Qaeda group linked to Osama Bin Laden, who was the mastermind of the attack that killed many people in the USA. The countries that supported the terrorist group automatically entered

into conflicts with the US government. The US government waged war against Afghanistan and Iraq for supporting terrorism and linking them to the Al-Qaeda group.

The Al-Qaeda group fought against any country that associated itself with the USA. The ISIS of Iraq and Syria have violent ideologies inspired by Al-Qaeda. This has instigated the world view against Muslim countries as terrorists regardless of whether they do not support the ISIS group. This has created an anti-US attitude and religious and political extremism. Lind (2003) asserts that the US marked the Iraq president as a great evil that threatened the security of every free nation, including the free nations of Europe.

2.1.2 Nature and Extent of Identity-Based Conflicts in Africa

Kagwanja (2003) points out that conflict in Africa is a result of globalization of ethnicity and localized citizenship that spurs conditions for various conflicts. Rubin (2006) describes ethnicity as a result of colonial divide and rule devices used for political control, enforcement of taxes and extraction of wealth. The colonial manipulations in Rwanda and Somalia are a result of Africa's post-colonial conflict. Specific groups, for example, the Somalis of Kenya, are stereotyped based on the tribal link with the Somali clans of Somalia who are associated with terrorist links in Kenya. Identification of persons of Somali origin to get identity documents in Kenya is a vigorous process since there are Kenyan Somalis and non-Kenyan Somalis who have gotten into the country as refugees. This, therefore forms a basis for biometric use by the Kenyan government to identify and distinguish the real Kenyan Somalis and those who are in the country as refugees. Nairobi, being a cosmopolitan county, faces the challenges of identifying such persons, which the study aims to resolve.

Mpangala (2000), states that transnational drug trafficking causes identity conflict where people involved in drug trafficking fake identities to penetrate through their networks in other countries. In such cases, tracking of an individual's nationality can be identified through the use of biometrics by international anti-drug agencies through the sharing of the biometric data of the person in question. Fingerprints have been used in the identification of cadavers, for example, in the case of the famous Kenya drug lord Ibrahim Akasha, who was shot in Amsterdam in May 2000, and a dispute arose on whether it was he who had been killed after serious tracking by the international police organizations for his dangerous trafficking of drugs.

His sets of fingerprints were recorded and circulated to all relevant fingerprint agencies worldwide. His body was later on positively identified using fingerprints at the National Registration Bureau (NRB) as a Kenyan citizen.

In Africa, the WBR (2015) explains how biometric identification systems can be used to address the challenge of conflicts that arise during and after elections due to election malpractices. The report further states that biometrics can be used for accurate voter registration, voter authentication, and even verification. The NDI (2011) report on Nigeria's elections affirms that AFIS made democracy live in the country. Nigeria's voter system was marred by double registrations that saw a rise of cartels in the electoral system. Biometrics was employed to remove this, bring sanity to the electoral system, and remove cases of double and multiple registrations. This was a milestone in Nigeria since the election was proved credible and transparent as a result of the use of biometrics, making the entire process peaceful.

The Kenyan identity conflicts, according to Cox *et al.* (2014), emanate from inadequate natural resources, historical injustices, poverty and political interference. To Cox, political manipulations with the identities of the people to get community backups cause conflicts, especially in electoral processes. Cox *et al.* (2014) state that political tensions among the major ethnic communities affiliated with major contestants, the Kikuyu and the Luo, have caused conflicts.

The 2007-2008 electoral conflicts that led to the displacement of persons and deaths are an example of identity-based conflicts inclined towards ethnic backgrounds in relation to political support, thereby worsening conflicts. Identification of genuine displaced persons within the Rift Valley region became a problem that needed verification of biometrics in the national population database. The number of internally displaced persons was large after news that compensation was in progress for their losses incurred during the post-election violence.

Dowd and Raleigh (2013) explain that conflicts in Kenya occur in urban areas, ethnic conflicts, and the borders of neighbouring countries. The boundaries, for example, Somalia, Ethiopia, Tanzania, South Sudan, Eritrea, and Yemen experience conflicts emanating from scramble for natural resources. Associations with the Al Qaeda and Al Shabaab networks that have been attacking the country with terrorism have been linked to Somalia, South Sudan, and Yemen, termed as fields of training for terrorists. These border conflicts necessitated vetting of people along border points entering the country, and only genuine Kenyans were allowed in. These verifications are done using biometrics on the national identity cards like fingerprints and photographs. These are done by fingerprint experts in conjunction with immigration department officials. The systems can be improved by incorporating the use of advanced biometric

identification systems to fully verify persons entering the country by using biometric technology which is based not only on fingerprints but also on other biometrics such as iris and retina.

Mpangala (2000) asserts that separation along borders can also be attributed to colonialism and governments that divided the country into ethnic colonies and electoral boundaries for political reasons. Drowd & Raleigh (2013) associate Somalia's border and coastal region with terrorism due to the Islamic religion. Some of the people in these regions do not have identification documents, hence causes identity crisis when there are disasters. Identity conflict based on religion segregates most Muslim persons in Kenya and the world linked to Al Qaeda and Al Shabaab networks.

Campbell, 2006, identified urban refugees and asylum in Nairobi as a neglected group and a source of identity-based conflicts in Nairobi. Campbell noted that this category of refugees faces harassment by authorities, abuse of basic human rights, and other forms of discrimination due to lack of proper identification. Kobia and Granfield, 2009 agree that there are notable protection challenges that worsen urban refugees, hence making them engage in various criminal activities. They identified the prevailing identification gaps and human rights abuse through restriction of movements and lack of clear policy on identification procedures of refugees and subsequent issuance of identification documents. They also observed that the number of urban refugees and asylum seekers without identification documents is on the rise in Nairobi, hence increasing identity-based conflicts within the city.

The need for accurate identification of persons is crucial for any organization or government. It offers satisfactory proof of identity, which is a prerequisite condition before someone receives any service within the country. Without proper identification of persons, people will fake their

identities, and this would lead to identity-based conflicts within the country. Management of refugees has been a major issue because some of them lack proper identification documents. This, therefore requires a water-tight system such as biometrics registration and verification to avoid such conflicts. Due to the vulnerabilities of refugees and prolonged urban refugee situations coupled with their inherent need to better their conditions of life, some normally attempt to register either themselves or their children as citizens in cosmopolitan cities such as Nairobi.

2.2 Effectiveness of Biometric Modalities Employed in the Management of Identity-Based Conflicts

Biometrics is a key tool that facilitates planning in service delivery through accurate identification of the people who deserve services in a particular country. Biometrics helps in answering the two questions: “Who is this person? and is this person the one he claims to be?”. This ensures that only legitimately identified people can access certain areas and services at a given time. Farraj (2010) observed that the extensive use of biometrics was embraced by the security agents during the September 2011 terrorist attack in the United States of America, particularly in border control, criminal identification, and surveillance.

In Nigeria, Weinberg (2016) observed that biometric identification was integrated into payroll and helped to weed out ghost workers. He also noted that biometrics improved service delivery through accurate identification, hence helping to reduce identity-based conflicts by strictly channeling resources to those who deserve them.

2.2.1 Biometric Modalities used in different Government sectors to Manage Identity-Based Conflicts

The government has faced the challenge of identifying people in different sectors of the economy particularly in the transport sector within Nairobi City County. The government used to identify the drivers and the *bodaboda* riders through the use of identification cards only. But in the recent past, there have been cases of criminal activities committed by these riders. This forced the government to order all *bodaboda* riders to register their biometric details for proper identification and crime control. The government order on biometrics registration was meant to control the increased crime rates committed by rogue *bodaboda* riders who escaped unpunished due to the lack of a system that could manage and regulate their activities in the sector.

The use of biometric technology to manage the sector has greatly helped in the regulation of the sector and ensuring that individuals caught breaking the law are brought to book.

The education sector has also faced identification challenges, particularly during examinations where fraudulent candidates act as impostors to cheat in the examination process. The government introduced the use of a photograph as a biometric tool, which led to the introduction of the NEMIS system for student/pupil identification. The National Education Management Information System (NEMIS) is a web-based data management solution that gathers data and information from educational institutions. It then processes and reports on the status of specific indicators that have been designed. The system aims to provide the education sector with a reliable foundation for effective management, ensuring that each learner is accurately identified. The Online Platform monitors the mobility of learners and teaching professionals in order to optimize the efficiency and effectiveness of educational resources.

The primary aim of the National Education Management Information System (NEMIS) is to enhance the efficiency of data administration in order to facilitate informed decision-making and strategic planning within the education sector. This is achieved by the centralization of student and pupil data, which is associated with a Unique Identifier obtained through a verifiable algorithm. This proposal aims to enhance the online platform for capturing education data at the school level, encompassing both school and learner information. The platform will enable education agencies to efficiently share the collected data, thereby streamlining administrative and decision-making processes. Additionally, it will incorporate an integrated Business Intelligence (BI) system that generates statistical data used for reporting national and international indicators within the education and training sub-sectors. This study aims to examine the various aspects related to the management of resources in educational institutions, such as infrastructure support, provision of textbooks, and facilitation of school feeding programs. Additionally, it seeks to explore the implementation of a tracking system for costing parameters in education and training, incorporating geographical information system (GIS) components. Furthermore, an online platform will be developed to enable geographical analysis of education indicators, including the production of maps that are essential in the education sector. Lastly, this research will investigate strategies to regulate cheating during the administration of national examinations.

The government, through the Miscellaneous Amendment Act 2018, section 9a, introduced the National Integrated Identity Management System (NIIMS) coded as HUDUMA NUMBER, which is anchored on biometrics identification. This is mainly aimed at solving identity-based conflicts arising from impersonation and identification of all persons living in Kenya.

2.2.1.1 Physical and Behavioural Biometrics

Physical biometrics such as fingerprints, iris, and face are part of an individual and, as such, offer the perfect means of personal identification that is adequate for solving identity conflicts (Nath, 2010). The biometric devices employed in this context rely on the acquisition and comparison of biometric traits to facilitate the establishment of a definitive identification. Fingerprints, facial features, and iris patterns are widely recognized as prominent physiological attributes employed in commercial biometric systems. Notably, fingerprints alone account for more than 50% of the civilian identity captured by such systems.

Signature and gait have weak distinctiveness as well as permanence behavioural characteristics and that is why they are not broadly used (Varchol & Levicky, 2007)

2.2.1.1.1 Fingerprint

Nath (2010) defines fingerprints as impressions left on any surface by the friction ridge of the inner part of the finger, thumb, or any part thereof, including the soles of the feet. The palmer surface of the hand, including fingers, and the sole of the feet, including toes, is covered with a special kind of skin called friction skin. Sudha (2012) points out that fingerprint science is a perfect science of identification based on two fundamental principles: permanency and uniqueness. She further stated that no two persons bearing identical fingerprints have been found or even heard since the creation of the world.

Hawthorne (2009) argues that the Chinese were the pioneers of using fingerprint biometrics in the management of businesses and legal enterprises. Family courts that handled disputes between husbands and wives, specifically divorce, used letters written in the husband's handwriting and authenticated them using fingerprints as proof of identity and prevention of future conflicts.

Nath (2010) describes Sir Richard Edward Henry (1850-1931) a London fingerprint expert as the father of fingerprints and one who started the famous Scotland Yard fingerprint bureau in 1901, the Federal Bureau of Investigation (FBI) in the United States and the Central Finger Print Bureau (CFPB) at Calcutta in India for personal identification purposes. His work in London helped to solve identity conflicts caused by wrongful convictions and mistaken identities. Sir Henry's system of identification, known as "Henry's system of fingerprint classification and identification", is currently used across the world for personal identification (Nath, 2010). This system of fingerprint classification was first adopted as the official system of identification in England and eventually throughout the world (Anderson, 2004). The Kenyan fingerprint bureau is based on Henry's system of classification and identification.

The Kenyan Fingerprint Bureau is based at the Directorate of Criminal Investigation (DCI) under the Police Service and the National Registration Bureau, mandated under Cap 107 laws of Kenya to identify and register Kenyans of 18 years and above. Other stakeholders take their own biometrics but verify with the ones at the National Registration Bureau as described in the law.

Sun *et al.* (2005) describe Johannes Evangelist Purkinje (1787-1869), a professor of physiology at Breslau University in Germany, as a writer of a Latin thesis in 1823 that described nine different types of fingerprints and formulated them into a system of personal identification and identity conflict management.

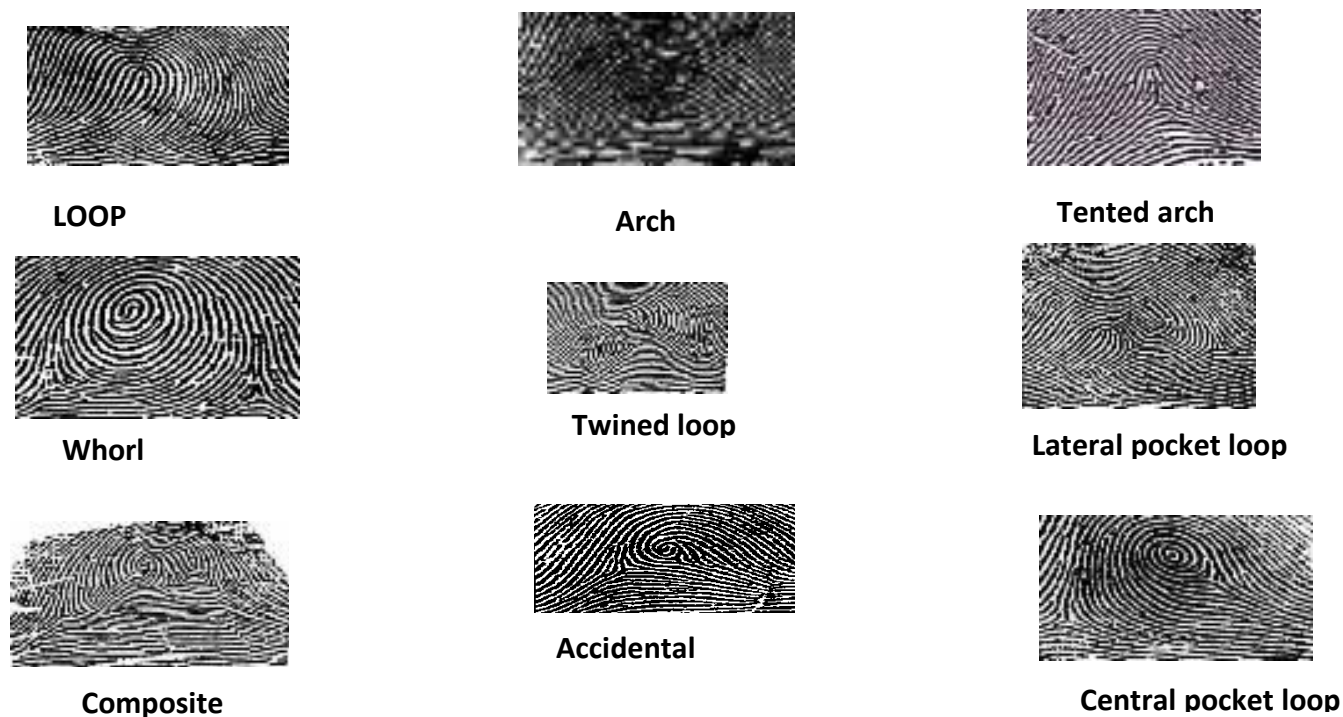


Figure 2. 1: Fingerprints patterns (Source: Hawthorne,2009)

2.2.1.1.2 Iris

Sudha (2012) defines iris recognition as an examination of pupil dilation and contraction using an iris scanner. The technology uses mathematical pattern recognition to analyze the surrounding of the colored ring of tissue around the pupil. The iris scan technology is highly accurate when taken from a distance thereby making it hygienic. Sudha (2012) describes the iris as flat, making it more predictable as the shape is flat. This biometric technology can be used in the application of passports and identity cards.

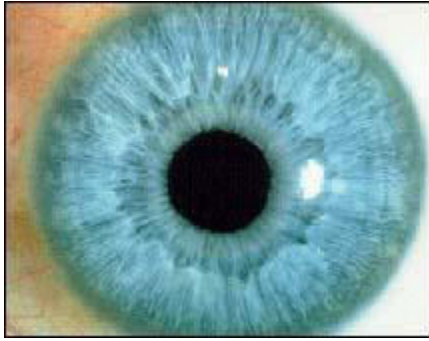


Figure 2. 2: Depiction of Iris Scan Biometric

(Source: <http://www.cnn.com/2000/TECH/computing/07/24/iris.explainer/iriscode>)

Sudha (2012) defines facial recognition as a biometric technology that captures and recognizes the human face. Facial recognition systems employ various facial attributes, including but not limited to the eyes, nose, lips, chin, and overall facial appearance. The performance of face recognition is negatively impacted by variations in lighting conditions, gestures, facial cosmetics, occlusion, and poses. Despite the non-intrusive nature, widespread acceptability among users, and satisfactory recognition performance in controlled settings, the implementation of reliable face recognition in less-than-ideal conditions remains a persistent difficulty.

2.2.1.1.3 Signature

The utilization of signature as a behavioral biometric modality is prevalent in routine commercial operations. Nevertheless, endeavors to create signature recognition systems with a high level of accuracy have yielded unsatisfactory results.

The primary reason for this phenomenon can be attributed to the significant variations that occur within an individual's signature over an extended period. Efforts have been undertaken to enhance the efficacy of signature recognition through the utilization of dynamic or online signatures, which

need the use of pressure-sensitive pen pads. Dynamic signatures are beneficial in capturing several aspects of the signing process, such as the shape, speed, acceleration, pen pressure, order, and speed of strokes, as they occur in real-time. The inclusion of this supplementary information appears to enhance the efficacy of the verification process, while also mitigating the risk of signature falsification. However, the deployment of automatic signature verification technologies remains limited.

2.3 Challenges of Biometric Modalities Employed in the Management of Identity-Based Conflicts

For a biometric system to be effective, Jain *et al.* (2004) assert that its performance, acceptability, and susceptibility to fraudulent use are key to be looked into. According to Jain, accuracy, speed recognition, proper lighting, trained staff, the willingness of the people to use the system, and whether the system is susceptible to fraudulent use are key characteristics that make a system effective. Therefore, the study seeks to establish the challenges experienced while using biometric modalities in the management of identity-based conflicts in Nairobi City County.

2.3.1 Operational Challenges

The physical characteristics of biometrics are not what determines the quality of biometrics, as described by Hicklin *et al.* (2011). The erroneous entry of the elements during administration is what generates errors. The operation of machines by people can cause the ineffectiveness of biometric modalities thereby causing conflicts. Biometric failure to address conflicts is associated with the failure of the identification system to identify persons due to malformed ridges. The factor of the human being's involvement in bias or inadequate search has not been taken into account. The level of knowledge or expertise on the use of biometric systems may hinder full usage and

exploration of inbuilt features of search of the system. Therefore, the study sought to examine the role of human expertise in causing the malfunctioning of biometric systems in dealing with identity conflicts in Nairobi.

According to Champod (2009), biometrics like fingerprints have unique characteristics based on the unique ridge structures, which make them efficient during identification and conflict resolution. However, in situations where there is a wrong matching of biometrics or alterations by fingerprint experts, examination by experts might be based on the conceptual bias of initial experts thereby making wrong judgments. In such contexts, fingerprint or iris experts need to work the extra mile of analyzing data, verifying and drawing conclusions based on the evidence biometrics data presented, and not relying on other expert opinions to make judgements and conclusions. Therefore, there exists a gap between biometric experts' analysis and verification that jeopardize conflict management of persons, resulting in wrong judgements and worsening conflicts.

2.3.2 Technological Challenges

Dror & Hanard (2008) explain that advancement in computer technology makes it easy to process information by use of technology rather than human expertise. This makes human beings leave all tasks to the computer, even those tasks that are meant for them to examine and draw judgements. In complex cases that need expert evaluation, for example, to identify a suspect from mixed samples of prints it becomes hard if the expert does not understand fully the functionality of a biometric system and run specific queries. This, therefore becomes a challenge to the competence of staff to handle complex cases which makes the biometric system an inappropriate method of personal identification in conflict management.

The NRC (2011) report outlines that secret identification is basically confined to movie creations made by people. The ineffectiveness of the performance of the surveillance cameras in the 2005 London bombings is an example that failed to identify perpetrators of the bombings since the cameras only produced videos searched by people and not the required machines. It is therefore important for the biometric industry to look into the use of surveillance cameras factoring in the cultural aspect of the people investigated since some traits that are suspicious to one culture might be acceptable to another. In this context, the use of biometrics may not be fully utilized in conflict management based on the role of culture that wasn't factored in technology.

Ploeg (2007) applauds the use of biometrics for defining a person in a digitized way. The gathering of biometrics of such nature is done in hospitals during medical examinations and performance testing, especially in sports and other biometric application systems like banks, national identity registers, and access entries, among other user applications.

The human observable characteristics become less definitive and different from the digitized information about us. In this context, people change how they walk or look as a survival tactic. Application of biometrics to recognize a person's history or acts in relation to the face, gaits and voice recognition may vary over time due to the assumption of this person's unique capabilities. In addition, biometrics only deals with the physical characteristics of a person and not the behavioural aspect of the person. Therefore, there is a gap in the way demographic data of people has not been factored in terms of behavioural change and unique attributes of a person. Biometrics only relies on evidential proof and not on behavioural aspects, which causes conflicts.

Dry skins, size of fingers and quality and the condition of the equipment used to capture or take biometrics can affect the quality of the biometrics, which can cause mismatch with other already stored biometric data (NIST, 2007). For example, the dry skin of fingerprints may affect the ridge characteristics or distort the fingerprint pattern of the fingers which becomes different from the already stored prints of the same person. In times of verification, the actual person upon search may not be identified. At times during the first capture, the machine used to record the biometrics may be faulty, thereby recording wrong information of the person. In this context, therefore, verification of the quality of the biometric machine and recording of changes in the physical traits of a person, if not considered, may produce mismatches.

According to Bolle (2004), the implementation and utilization of biometrics are anticipated to incur significant expenses. Therefore, it is crucial to undergo a comprehensive procurement procedure in order to identify the most suitable and economically efficient solution. The implementation of a precise biometric system necessitates a significant amount of time, perhaps spanning several months or even years, to effectively design and establish a system capable of securely storing extensive records, such as the population data of Kenya.

2.4 Opportunities of Enhancing Biometrics in Management of Identity Conflicts in Nairobi.

The provision of too many steps can cause delays and errors by users as echoed by Proctor (2000). If there are many steps to access the system, time to access required information will be long. It is then of importance for biometric experts to design systems that have a few steps that allow quick access to information.

2.4.1 Biometrics Policy Review

The current biometric policy is based mainly on Cap 107 which mainly deals with the use of fingerprints but does not capture the use of other biometrics such as Iris and DNA. The policy should, therefore be reviewed to incorporate the use of all biometric modalities. Policy reviews of identification procedures are key in addition to investment in a secure biometric system. The current registration and identification steps are based on the colonial system of identification meant to deprive people of freedom.

There is a need for reviews in legislation, for example, the Cap 107 Laws of registration of persons of Kenya, to allow the department to prosecute perpetrators of crime instead of passing through the criminal investigations department of police. Once data has been scrutinized and found questionable, the department forwards them to the police for further investigations, an action that, in most cases, is tampered with due to corruption or takes a longer time to finalize the cases due to the procedures of investigations involved. This will ensure that security is maintained at the initial registration level (Kimocho, 2015).

2.4.2 Integration of Biometrics

Saini (2016) notes that in order to address the challenges of using one biometric modality in conflict management, which at times fails, the application of a multimodal biometric system is relevant. The multimodal biometric system involves the integration of two or more biometric modalities in recognition and verification. This enhances performance and overcomes the limitations of one biometric modality.

Since terrorists or criminals impersonate by faking identities of their fingerprints and faces, the multimodal biometric system will verify the multiple information and the characteristics presented

at entry points of the country. Ross *et al.* (2006) explain that systems themselves can be a source of conflict and also a solution to conflict. The Bertillonage system developed by Alphonse Bertillon (1853-1914) as an identification system based on detailed records of body measurements, physical description and photographs became a source of conflict. In 1903, a case of identical twins William West and Will West at a Federal prison in Leavenworth, Kansas, became a point of interest. Will West's photograph was taken with other measurements as per Bertillon's age system. Scrutiny of the results indicated that the same details belonged to a one-time prisoner named William West.

Investigation through the Bertillon age system failed to differentiate and identify the identical twins, causing an identity conflict. This called for the use of fingerprint comparison that quickly and correctly identified the twins (Ross *et al.* 2006). In this regard, therefore, the failure of one biometric modality does not mean the end of the investigation. It is imperative to explore other biometric modalities in solving identity-based conflicts.

Kimotho (2015) outlines that the rise of terrorist activities in Kenya limited the sharing of biometric information of citizens since terrorists were misusing photos of registered persons and only when there was a request by courts of law. However, theft of identification documents due to lack of security in the country and dropping them at crime scenes causes perpetrators to be misidentified.

In addition, falsification of information about registered persons to gain access to unwanted places is common. Therefore, there is a need to enforce stiffer criminal penalties for misuse of biometric information in Kenya in order to realize its benefits.

2.5 Conceptual Framework

A conceptual framework refers to a compilation of interconnected ideas that are derived from several philosophies. The set of prepositions in question can be considered reasonable, as they are based on and substantiated by empirical data or evidence. The conceptual framework serves to elucidate the manifestation of events and provide insight into the underlying causes that govern their occurrence (Kombo & Tromp, 2006).

The study used two theories: human nature conflict theory to address the issues of conflicts in society and diffusion of innovation theory to address the modern trends in technology.

2.5.1 Human Nature Conflict Theory

According to Karl Marx's theory of human nature conflict, society experiences ongoing conflicts because of the battle for finite resources. According to this perspective, the maintenance of social order is predicated on the exercise of dominance and power rather than relying on consensus and compliance. According to the hypothesis mentioned above, individuals with wealth and influence endeavour to retain their advantageous positions through various tactics, mostly through subjugating individuals who are economically disadvantaged and lack authority. One fundamental tenet of conflict theory posits that individuals and collectives within a given society actively strive to optimize their own advantages, hence engendering conflict as a natural consequence.

2.5.1.1 Merits and Demerits of Human Nature Conflict Theory.

Human Nature Conflict Theory explains social stratification in society. It portrays life as a continuous struggle between groups and scarce resources, thereby helping to understand the reasons for a fight between people in different social economic classes, which include employers, employees, government and the citizens. It pinpoints the origin of tensions and social classification

in the society, which are parasitic and only benefit one group, which is powerful, while negatively affecting the powerless.

The theory observes how unrest in society will cause a revolution as a result of conflicts between competing interests with the hope of the oppressed changing their situation. It seeks to free people from false claims of universality where a particular group takes power and justifies it that they represent the freedom of all while it is the freedom for themselves.

The Human Nature Conflict Theory challenges the notion of human nature and the enduring nature of natural forms, instead emphasizing the concept of alienation. The statement posits that the presence of individuals exhibiting anti-social behaviour within a given group can be attributed to the influence of class-based governance and related factors. Human nature is corrupted by social stratification in the form of civilization and domination, which should be eliminated to allow people to cooperate. This affects relationships negatively in society and ignores harmony. The theory emphasises exploitation and oppression with no attention to how a society functions as a family.

According to Irving (2007), there exists a disparity in the acquisition and retention of resources among individuals and organizations. Those who are successful in this regard, referred to as the "winners," employ their power and influence to sustain social structures, thereby giving rise to conflicts. According to Sudha (2012), biometrics is growing in significance. Sudha suggests that the widespread adoption of biometrics for transactions and authentication procedures might contribute to the effective management of disputes related to identity. Conversely, failure to implement biometrics in these processes may lead to the emergence of identity-based conflicts. Prabhakar (2004) asserts that, however, changes in the behavioural traits of individuals and

involvement in surgeries like plastic surgery may jeopardise the accuracy of biometric modalities like face recognition. This poses a challenge in terms of comparison of the current photo against the previously already stored ones. Since the Human nature conflict theory associates conflicts with national leaders, it means that there is a need for the same leaders to embrace technology as a sure way of solving conflicts.

2.5.2 Diffusion of Innovation Theory

The notion mentioned above was formulated by Everett Rogers in 1962. Rogers posits that diffusion refers to the mechanism via which the dissemination of innovation occurs among individuals within a given social system, unfolding gradually over a period of time. Due to the increased number of identity-based conflicts, there is a need to embrace technology through innovation for faster identification of persons. Biometrics, being a new technology for the authentication and verification of individuals, has gained momentum in almost all sectors of the social system, including banking, institutions of learning and government ministries. According to Rogers (2014), adoption is a decision of “full use of an innovation as the best course of action available”, and rejection is a decision “not to adopt an innovation”. Rogers defines diffusion as “the process in which an innovation is communicated through certain channels over time among the members of a social system”. As expressed in this definition, innovation, communication channels, time, and social system are the four key components of the diffusion of innovations.

2.5.2.1 Merits and Demerits of Diffusion of Innovation Theory

Diffusion of Innovation Theory helps in explaining the adoption and spread of new ideas and technology in society. Initially, fingerprints used to be recorded on a slab, but with improved technology, this can now be done using inkless format. The theory, therefore identifies key factors

that influence the rate of adoption and also predicts the emerging trends in technology. Organizations can use these theories to identify potential barriers to adoption and develop strategies to overcome them.

Diffusion of Innovation Theory focuses on innovation, and it ignores other complex factors such as culture and economic conditions. Destructive technologies might have a negative drastic impact on diffusion patterns and even resistance by society.

2.6 Conceptual Model of Study

According to Mugenda & Mugenda (2008), a conceptual model is a graphical or visual depiction of the important factors of a study, which serves as an explanatory tool for understanding the phenomenon under investigation. The framework establishes a connection between the independent variables and the dependent variables in the research. The present study examined the correlation between various biometric modalities, such as fingerprints, iris scans, face recognition, and signature analysis. It explored how these modalities contribute to addressing issues related to impersonation, fraud, identity theft, and conflicts arising from the use of deceased individuals' identities.

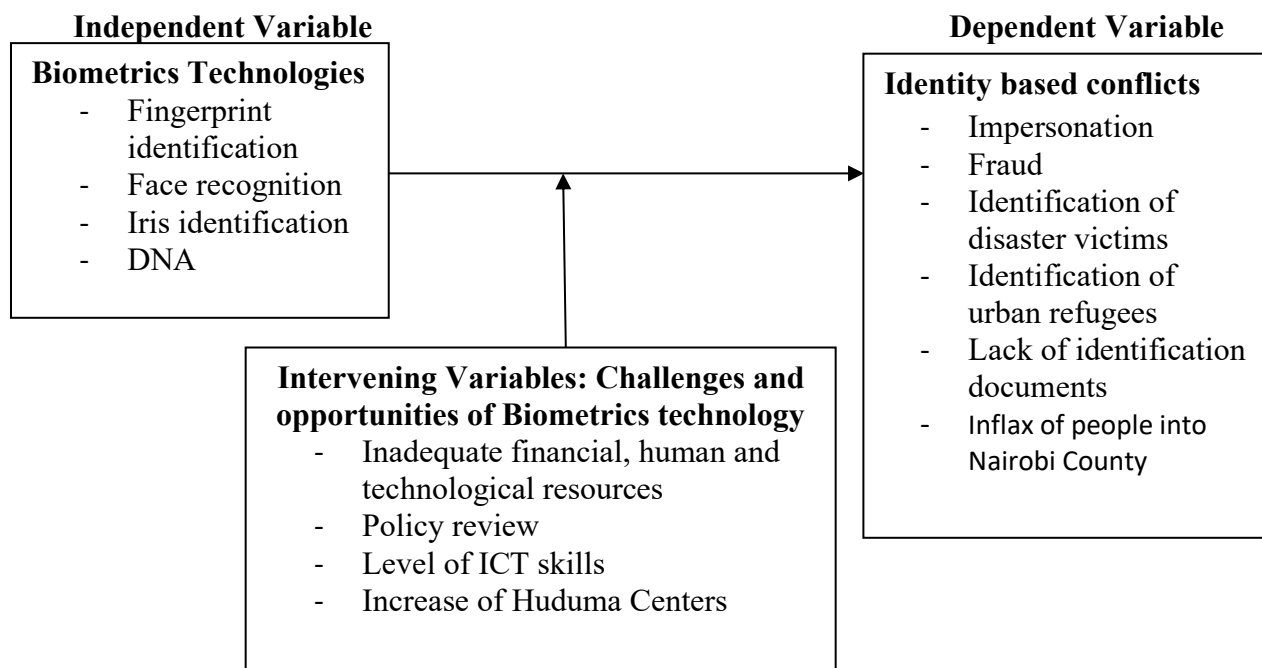


Figure 2. 3: Conceptual models showing the relationship among independent, dependent and intervening variables.

2.7 Chapter Summary

The use of biometrics in personal identification as a process of conflict management has been mainly used in the criminal justice system, but to the general public, it remains a mystery.

Sudha (2012) asserts that biometrics are gaining importance and that if the world adopts biometrics in making transactions and authentication processes, it will help in the management of conflicts and failures which will result in identity conflicts.

Therefore, there is a need to create awareness among the different institutions as well as among the general public on the relevance of biometrics in conflict management.

According to Marret (2001), conflicts on ethnic lines don't necessarily become violent but rather occur due to conflicting ideas, aims and goals. Therefore, handling ethnic conflicts requires interdisciplinary and multifaceted approaches that encompass cultural, social, economic and political dimensions. Therefore, there is a need to use biometrics in conjunction with other social, cultural, political and economic approaches to conflict management, an aspect that McLuhan did not consider in his theory. In this regard, therefore, the researcher wishes to establish whether biometrics application can only be a way of solving identity-based conflicts.

CHAPTER THREE

RESEARCH METHODOLOGY

Introduction

The chapter elucidated the methodologies employed in the conducted investigation. The study primarily examined the research design, target population, sample size, sampling techniques, data collection procedures, data analysis and discussion of results, research limits, research ethics, research assumptions, research work plan, and research budget.

3.1 Research Design

The researcher employed a descriptive survey research design in this study. The descriptive survey design is a research methodology that involves the collection of information through interviews or the administration of questionnaires to a selected sample of individuals. According to Orodho (2003), this method can be employed to gather data about individuals' attitudes, opinions, and behaviours. This design is considered preferable due to its ability to guarantee the appropriate formulation of questions for eliciting the necessary information, ascertain the identification of the surveyed individuals, specify the methodology employed for conducting the survey, and present a summary of the data that offers descriptive insights. The researcher expressed a preference for this particular method because of its ability to facilitate the collection, analysis, and interpretation of observed data from various regions within Nairobi City County. Additionally, this method enabled the compilation of both numerical and descriptive data, which was utilized to assess the association between variables, according to Orodho (2003). According to Mugenda & Mugenda (2008), descriptive research serves the purpose of not only gathering factual information but also

contributing to the development of fundamental principles of knowledge and the identification of solutions to underlying problems.

The utilization of a descriptive survey allowed the researcher to collect statistical data pertaining to the impact of Biometric Technology on the management of identity conflicts within Nairobi City County.

The present study employed a combination of qualitative and quantitative data collection approaches. The utilization of both methods served the purpose of maximizing the collection of data for the study while also providing a means of triangulating the acquired information. (Kothari, 2014).

3.2 Study Area

According to Kombo and Tromp (2006), a study area refers to the specific location where a research study is conducted, and it is directly related to the objectives of the investigation. The research was conducted at the regional offices of Nairobi City County, with a particular emphasis on various entities such as the National Government Administration officers, National Police service, NRB Headquarters Nairobi, Huduma Centre Eastleigh, Huduma Centre Makadara, Huduma Centre Kibera, NSSF Nairobi, IEBC Nairobi, RAS Shauri Moyo, and KRA Data Centre Nairobi. The selection of the research site was determined by the distribution of biometric data throughout Kenya, involving important players from the National Registration Bureau Biometric Server, as specified by the CAP 107 Laws of Kenya. The Refugee Affairs Secretariat (RAS) is responsible for the compulsory registration of all individuals seeking refuge and asylum upon their arrival in the nation. Within Nairobi, the Shauri Moyo location serves as the designated centre for first registration.

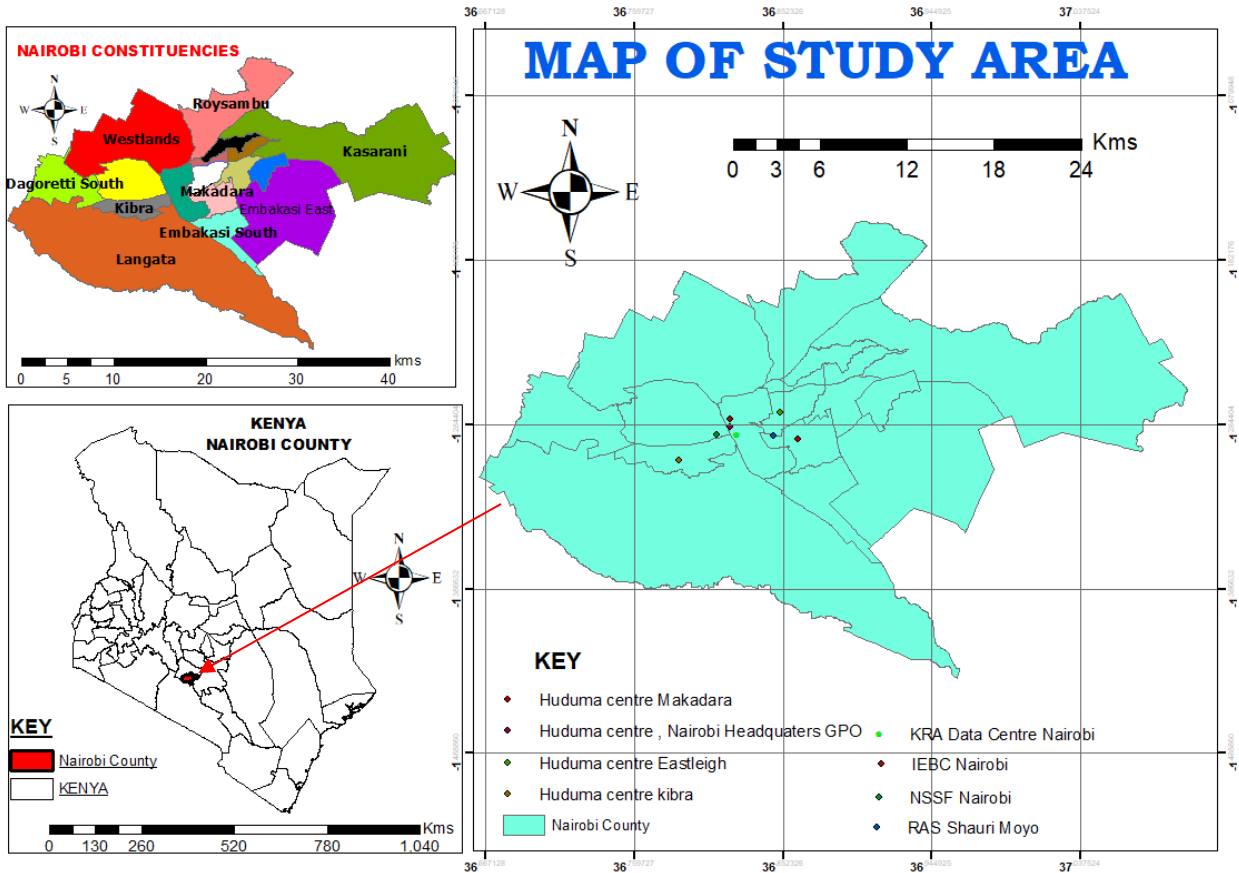


Figure 3. 1: Map of Nairobi City County and Kenya Showing Position of Nairobi where the research was conducted

Source: Researcher, 2022.

3.3 Study Population

According to Kombo and Tromp (2006), the target population refers to a collective of humans, objects, or products that are selected as samples for measurement, or it can encompass the full group of individuals that share a common characteristic. The sample size consisted of 300 individuals, primarily selected from the Ministry of Interior and individuals affected by identity-based conflicts. The population of fingerprint workers employed at various government institutions in Nairobi, including NGAO, NPS, NRB, IEBC, RAS Shauri Moyo, and Huduma

Centers, was reported to be 280 individuals, as stated by the Ministry of Interior & Coordination of National Government Human Resource Database in 2021.

The study also examined a sample of 20 individuals who were affected by identity-based conflicts, with their cases being recorded to the National Government Accountability Office (NGAO) and the National Police Service (NPS). The individuals affected by this issue encompass people whose identification documents have been utilized for deceitful endeavours within the jurisdiction of Nairobi City County. The categories of staff who normally interact with the biometric system in their day-to-day activities to solve identity-based conflict include; fingerprint officers, registration officers, Huduma Centre staff, and IEBC officers. This is shown in Table 3.1

Table 3. 1: Study Population

Designation	Department	Population size
NGAO	NRB Nairobi	30
Police officers	NPS	20
Registration Officers	NRB Nairobi	30
Forensic officers	NRB legal unit	10
Fingerprint Officers	NRB Nairobi	80
Huduma Centre staff	Huduma Centers Nairobi	60
NHIF Data officers	NHIF Headquarters Nairobi	30
IEBC Officers	IEBC Headquarters Nairobi	20
Identity-based Conflict Victims	Nairobi	20
Total		300

Source: Ministry of Interior & Coordination of National Government Human Resource Database, IEBC and NHIF (2021)

3.4 Sampling Strategy

3.4.1 Sample Size Determination

According to Gilgun (2005), a sample size refers to a subset of the population that possesses comparable features to the overall population under investigation, hence serving as a representative representation. The researcher utilized the Yamane formula, as proposed by Yamane in 1967, to select a sample of 300 respondents from the population (Ministry of Interior & Coordination of National Government, NHIF, and IEBC, 2021).

$$n = \frac{N}{1 + N(e)^2}$$

Where;

n is the sample size

N is the population size

e is the level of precision (0.05)

When we substitute the values, then;

$$\begin{aligned} & \frac{300}{1 + 300(0.05)^2} \\ &= \frac{300}{1 + 300(0.0025)} \\ &= \frac{300}{1.75} \\ n &= 300/1.75 \end{aligned}$$

$n = 171.428 = 171$; Therefore, the sample size for this research was 171 respondents of individuals both with the ICT and biometric skills.

The people in charge of conflict management in the study were mainly the National Government Administration Officers and National Police Service who are working in collaboration with

fingerprint officers who are working within the Ministry of Interior and Huduma Centers within Nairobi City County. Fingerprint officers are the key and majority in the use of biometrics hence the reason why most of them were interviewed.

Table 3. 2: Study Population, Sampling Methods and Data Collection Instrument

Study population	Total sample	Sample size Determination Method	Sampling method	Data collection instrument
NGAO	30	15	Purposive sampling	Interview Questionnaire
Police officers	20	15	Purposive sampling	Interview
Registration officers	30	15	Purposive sampling	Interview Questionnaire
Forensic officers	10	10	Quota sampling	Interview
Fingerprint Officers	80	41	Purposive sampling	Questionnaire Interview
Huduma center staff	60	30	Purposive sampling	Questionnaire Observation
NHIF data officers	30	15	Quota sampling	Questionnaire Interview
IEBC officers	20	10	Quota sampling	Questionnaire
Identity-Based Conflict victims	20	20	Quota snowball sampling	Interview

Source: Ministry of Interior & Coordination of National Government Human Resource Database, IEBC, NHIF and The Researcher (2021)

3.4.2 Sampling Procedures

Sampling is the methodological procedure employed to pick individuals who will constitute the sample. The researcher utilized the quota sampling technique, as described by Mason (2002), which involves establishing predetermined categories and specifying a minimum number of instances to be included in each category.

Purposive sampling was deployed for the selection of key informants that hold crucial information regarding the dissemination of biometric data. Purposive sampling according to Mason (2002) is a technique that the researcher employs based on the theoretical understanding of the topic to get specific information that will enrich the study.

Snowball sampling which was used for existing subjects provided referrals to relevant samples required for the research study. The subjects provided primary data and nominated other potential sources that were able to participate in the research studies.

3.5 Data Collection Tools and Instruments

3.5.1 Primary Data

Primary data collection instruments employed were questionnaires, interview schedules and observation.

3.5.1.1 Questionnaires

A questionnaire is a collection of printed or written inquiries used to gather data for research purposes (Orodho, 2003). The questionnaire consisted of both closed-ended and open-ended items. The questionnaire is deemed optimal due to its comprehensive coverage of staff members at all hierarchical levels, as well as its distribution across all departments within the designated research domain. The questionnaires have been specifically created to collect data that is aligned with the

study's aims. The surveys were administered to various participants after undergoing a preliminary test. The design of the questionnaire (Appendix II) was formulated per the study goals. The questions were formulated to elicit fixed responses that correspond to the provided answers. Furthermore, the utilization of open-ended questions entailed the formulation of inquiries that necessitated novel ideas and opinions, so facilitating the extraction of analytical insights into the study's aims. The participants of the survey consisted of fingerprint officers employed by several organizations, including NRB, NPS, Huduma Centers, IEBC, NHIF, and County Administration Offices.

3.5.1. 2 Interview Schedules

An interview is a research technique that involves the collection of qualitative data through the process of posing targeted inquiries to participants. The researcher utilised a pre-determined interview schedule, informed by their expertise on the subject matter, which consisted of open-ended questions designed to elicit responses from the participants (Sanderson et al., 2013). The interview schedules, as outlined in Appendix III, were administered to senior officers who play a central role in the decision-making process. The interview schedule was deemed suitable for this particular category since it successfully elicited information that was not accessible from anybody other than procedural senior officers who were directly involved in the decision-making processes of the departments. The interview schedule was developed to include a set of questions that would function as a framework for the study, aligning with the specific aims of the research. In this study, open-ended questions were employed to gather sensitive information on the primary research subject under inquiry. The interviews conducted in this study were enriched by the valuable contributions of key informants from Huduma Centres, the National Registration Bureau, and the

National Hospital Insurance Fund. These informants shared confidential information that proved to be highly relevant and beneficial to the research.

3.5.1.2.1 In-depth Interview Schedules

The victims of the identity-based conflicts were taken through an in-depth interview. This is because these victims were from different backgrounds and professions. One of the identity-based conflict victims responded by saying that his identification documents had been used by fraudsters to withdraw money from his accounts.

3.5.1.3 Observation Checklists

The study entailed the actual observation of events as they occurred or transpired. The study entailed the systematic observation of fingerprint officers at Huduma Centers while they performed their routine duties, with their conduct documented on an observation checklist. The fingerprint officers stationed at the National Registration Bureau (NRB) and the Huduma facilities were subjected to observation for this research study. The study documented the utilization of biometric devices by officers in their respective workplaces to collect biometric data, which was then recorded in photographic form.



Plate 3. 1: Fingerprint Officers Recording Fingerprints at Huduma Centre on 13th July 2022

3.6 Validity

According to Saunders et al. (2000), validity is the ability of the researcher to verify what they plan to explore. To assess the questionnaire's validity, the questions about the study objectives were compared to existing secondary data. If any uncertainties arose, the instrument was updated accordingly. The researchers in this study chose to utilize criterion validity as a method to establish the correlation between the tests being conducted and other variables that have already been established as valid. The questionnaires underwent a rigorous development process, including multiple assessments by a Research Supervisor to ensure their credibility. They were then administered to respondents for testing purposes, with two to three iterations. Once the findings were consistently aligned, the instrument was deemed legitimate for usage. The concept of validity pertains to the extent to which a research study accurately captures the desired construct or the degree of truthfulness exhibited by the obtained research outcomes (Joppe, 2000). Prior to the commencement of data collection, a face validity assessment was conducted to evaluate the questionnaire's visual appeal, practicality, readability, uniformity in formatting, and clarity of language.

3.7 Reliability

According to Joppe (2008), reliability refers to the extent to which the outcomes remain consistent when multiple tests are conducted using the same approach. This implies that the instruments will consistently assess the desired attributes throughout a period. The research utilized the Test-Retest reliability method, which entailed selecting a limited sample of ten participants from the chosen location of reliability. This was done following the project supervisor's guidance to distribute questionnaires and conduct interview sessions. To establish the reliability of the instruments used in the study, an equal number of questionnaires and interview questions were administered for a

second time. Subsequently, upon observing similar results, it was determined that the instruments could be deemed reliable for use in the study. The dependability of the results was determined by a coefficient of 0.9 or above, indicating a strong level of consistency between the scores obtained in the first and second tests. In their study, Kothari and Garg (2014) delineate three distinct categories of reliability that are commonly discussed in the context of quantitative research. These categories pertain to the extent to which a measurement, when administered repeatedly, exhibits consistency, the ability of a measurement to maintain stability over some time; and the degree of similarity observed among measures within a specified time frame. According to Katou (2008), a questionnaire is deemed credible if the Cronbach's Alpha coefficient exceeds 0.70. The dependability of the independent variable and the dependent variable was assessed by a reliability test conducted using the Statistical Package for the Social Sciences (SPSS).

3.8 Pilot Study

Pilot testing refers to carrying out tests of the instruments to be used before the actual research is done by conducting trials about the objectives of the study (Mugenda & Mugenda, 2008). Questionnaires were developed with sets of questions for pilot testing to check the reliability and validity of the instrument of data collection. The pilot testing was done at Huduma Centre Kibera which is the Huduma Centre mandated to produce duplicate identity cards in one day. The ease and timeline, being important aspects of the testing, made Huduma Centre appropriate as it is an extension of the main biometric centre.

3.9 Data Processing and Analysis

According to Kothari (2014), research analysis is a systematic technique that encompasses the processing, packing, evaluating, and analysis of obtained data in a simplified manner.

Descriptive and inferential statistics were utilized in the data analysis process. The primary objective of descriptive statistics is to facilitate the researcher in effectively describing a distribution of scores or measures by utilizing a limited number of indices or statistics (Mugenda & Mugenda, 2008).

In the field of statistics, inferential statistics is employed to leverage sample data to derive estimates, make informed decisions, formulate predictions, or establish broader generalizations of a wider population of data. Following the process of data collecting and preceding the commencement of data analysis, a preliminary step was undertaken to refine the collected data by eliminating any extraneous or undesirable information that had the potential to impede the subsequent analysis. The process involved the systematic arrangement and revision of the data in order to eliminate redundancies, discrepancies, inaccuracies, and any elements that were not comprehensible as initially provided by the participants. The subsequent step was the process of coding the data, wherein numerical values were assigned to the potential answers in order to determine their treatment. The collected data was thereafter saved in both electronic and physical formats to facilitate its accessibility and utilization during the analysis phase. The qualitative data obtained from the survey was categorized based on the progression of the study. This facilitated the discovery of pertinent information pertaining to the research objectives and research questions concerning the utilization of biometrics in identity-based disputes in Kenya. The data was systematically organized and categorized based on the observable features and subsequently

analyzed within each respective category using frequency tables. The data was subsequently shown in tables presenting frequencies and percentages, utilizing the Statistical Package for Social Scientists (SPSS) and Microsoft Excel (M-Excel) for both analysis and presentation purposes. According to Orodho (2003),

The researcher employed a qualitative methodology to analyze the data derived from questionnaires and interview responses. This approach aimed to gain a deeper understanding of the obstacles that impede the functioning of an efficient biometric system and to identify potential strategies for addressing these issues. The findings of this study were drawn from the analysis of the collected data, leading to the formulation of conclusions.

3.10 Limitations of the Study

Kombo & Tromp (2014), states that limitations are shortcomings that cannot be controlled by the researcher during the research. The researcher anticipated that since biometrics is mainly used by government agencies and departments, some of these agencies would shy away from sharing their information. Due to government restrictions, some respondents would fear giving out information for fear of victimization. To address the challenge of fear of victimization, the researcher used legislative documents, for example, the NACOSTI permit and a letter of introduction from Masinde Muliro University, which allowed the researcher to carry out the research for academic purposes only.

3.11 Delimitations of the Study

The study concentrated on the specific issues of conflict about biometrics use since both identity conflict and biometrics are broad subjects of study.

The research studied the biometrics used in Kenya with a specific focus on fingerprints, photographs and signatures that are majorly used. In addition, the researcher limited the study to staff working at the biometrics centre of Nairobi.

3.12 Ethical Considerations

According to Kombo and Tromp (2014), ethical issues pertain to the set of principles that regulate the conduct of researchers. The researcher employed the introductory letter provided by Masinde Muliro University as a means of verifying their identification. The researcher was granted a permit by the National Council for Science Technology and Innovations (NACOSTI), which enabled them to investigate full compliance with the necessary research protocols. In addition, before conducting the research, the researcher obtained consent from the County Commissioner, the Director of Education for Nairobi City County, and the local administration.

Okoth (2012) asserts that the mistreatment of human study subjects constitutes unethical behaviour. Obtaining informed permission from research participants and safeguarding their rights are essential concerns in the field of research. Hence, it was crucial to safeguard research assistants and informants. Regarding the immediate perspective, the researcher assumed the duty of safeguarding against any potential misuse of confidentially.

The aforementioned assertion is supported by Montzorou and Fouka (2011), who contend that research ethics holds great importance in the field of research, emphasizing that an individual's identity should not be disclosed without their informed consent. Participants were incentivized to provide information openly and honestly to the researcher, with the understanding that their views

would be kept confidential. The participants were duly told that the data collected would be exclusively utilized for academic objectives.

According to Montzorou and Fouka (2011), the preservation of subjects' dignity and the integrity of publication are of utmost importance. The researcher obtained an informed and voluntary agreement from the participants to safeguard against any potential psychological or bodily harm that may arise throughout the course of the study. The concept of research ethics empowers researchers to address ethical quandaries encountered during the course of their research endeavours. In essence, the authors assert that the fundamental principles of informed consent, beneficence, non-maleficence, respect for anonymity and confidentiality, as well as respect for privacy are of utmost importance.

Moreover, the act of appropriating ideas from the work of others without obtaining proper authorization is morally reprehensible. Montzorou and Fouka (2011) conducted a study. This study examined the significance of giving credit to others for their work by recognizing their expertise and contribution. Consequently, the act of plagiarism was avoided.

According to Okoth (2012), the act of deliberately ignoring or failing to acknowledge the origin of the material used in the study might be considered a kind of academic misconduct. The present study thus considered the research methodology employed in the field of investigation. The study also incorporated the examination of inviolable human rights. Numerous practices are deemed to be in violation of ethical standards. Hence, it is imperative that rigorous disciplinary measures be imposed in response to any instances of academic dishonesty. In summary, the researcher will prioritize obtaining informed consent from participants and ensuring the confidentiality of the data

provided. Additionally, the researcher will strictly adhere to ethical guidelines by refraining from engaging in plagiarism or falsifying any research findings. The researcher also thanked the contributions of numerous authors in the scholarly literature that would serve as the foundation for this investigation.

3.13 Chapter Summary

The chapter provided an overview of the research methods employed in the study. The research employed a descriptive research design to gather, analyze, and interpret empirical data. The study focused on a sample size of 300 participants, who were selected from various institutions like the NGAO, NPS, National Registration Bureau Headquarters, and biometrics agencies located in Nairobi. The researchers employed a quota sampling strategy, wherein participants were picked based on their departmental affiliation. The departments were organized into series, and a minimum number of participants was chosen from each set. Furthermore, the utilization of purposive sampling was implemented during the interview process to obtain insightful responses to inquiries of a delicate nature. The sample size was determined as 171, utilizing the Yamane formula developed in 1967.

The research employed a combination of primary and secondary data sources. Primary data collection methods included the use of questionnaires, interviews, and observation checklists administered by the researcher. Secondary data was obtained through journals and books. The data analysis was conducted utilizing both qualitative and quantitative methodologies. The data analysis was conducted using version 15 of the Statistical Package for Social Scientists. The data was presented in tabular format. Qualitative research encompasses the utilization of non-numerical data presented in narrative form, while quantitative research involves the application of descriptive statistics, such as frequency counts and percentages, to represent nominal or ordinal data.

CHAPTER FOUR

NATURE AND EXTENT OF IDENTITY-BASED CONFLICTS IN NAIROBI CITY COUNTY, KENYA

This chapter presents the findings on the nature and extent of identity-based conflicts in Nairobi City County based on the research objectives and research questions of the study. The data summarized in tables derived from the questionnaires, interview questions, and the observation checklist computed for interpretation. The chapter ends with a chapter summary.

4.1. Rate of Response

The researcher distributed questionnaires to the members of staff for NGAO, National Police Service (NPS), National Registration Bureau (NRB), Huduma Centers (Eastleigh, Makadara, and Kibera), National Hospital Insurance Fund (NHIF), and Independent Electoral and Boundaries Commission (IEBC).

The researcher adopted the Yamane formula, 1967, from a population of 300 respondents, hence a sample size of 171, and only 150 respondents participated by answering the questions and returning the questionnaires. Out of the 171 sample size, 150(87.7%) questionnaires were filled and answered survey questions. Additionally, 21(12.3%) staff respondents did not fill in the forms due to their tight work schedules and commitments despite having shown interest in answering survey questions. Therefore, the total number of respondents in quantitative terms was 150(N).

The results are illustrated in Table 4.1.

Table 4. 1:Rate of response

Response	Frequency	Percent
Questionnaire	150	87.7
No response	21	12.3
Total	171	100.0

Source: Field Data,2021

4.1.1 Age of Respondents

The study sought to ascertain the age bracket of respondents. According to the analysis of respondents' age, the 18-25 brackets had a response rate of 10(6.33%), which was the lowest, followed closely by the above 50 age bracket with a response of 20(13.33%). The age bracket 42-49 years had a response of 25(16.67%), the 26-33 bracket with 45(30%) and the highest of all was the 34-41 age bracket with 50(33.3%) response rate. These results indicated that the age bracket 34-41 years had a high contribution to this research. The results are illustrated in table 4.2.

According to Mugenda & Mugenda (2003), a reliable and valid sample is one which allows the researcher to generalize the research findings from the sample population and should be reliable to reflect the population parameters with minimal error. According to the findings the researcher achieved his objectives by involving the required age categories for primary data, analysis and report.

Table 4. 2: Age of the respondents

Age bracket	Frequency(N)	Percent
18-25	10	6.33
26-33	45	30
34-41	50	33.33
42-49	25	16.67
above 50	20	13.33
Total	150	100

Source: field Data,2021

4.1.2 Gender of the Respondent

Figure 4.1 displays gender of the respondents in the study. The response shows 91 (60.67%) of the total respondents being male whereas 59(39.33%) female. This indicated a high figure of male response compared to female.

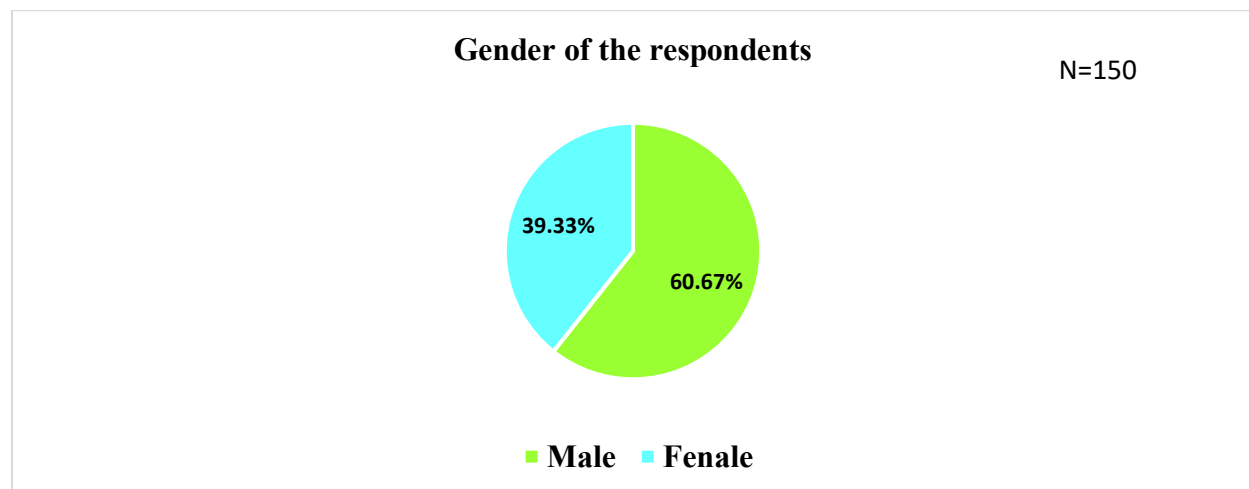


Figure 4. 1: Gender of the respondents

Source: Field Data,2021

The findings agree with (Martin, 2011) in a study entitled ‘Envisioning Technology through Discourse: A Case Study of Biometrics in the National Identity Scheme in the United Kingdom,’ where most respondents were male, with only a few females participating in the research. The author contends that notwithstanding the presence of irregularities observed in technical assessments of biometric systems, note-worthy discoveries exist. For instance, facial recognition systems demonstrated a higher level of accuracy in identifying men compared to women, and those with greater body weight were more readily recognized than those with a slimmer physique.

The cultivation of appropriate family values and moral principles can effectively serve as a guiding force in the holistic development of young individuals, facilitating their progression towards a positive trajectory in life. The presence of an incomplete family structure, characterized by factors such as parental separation or parental death, might result in young women experiencing a lack of typical family care. Consequently, they may become vulnerable to deception and exploitation by individuals of questionable character. Aberrant familial dynamics, such as disturbances in marital and emotional bonds, have the potential to engender depressive symptoms and heightened levels of tension in women. These women are prone to developing a significant discontentment towards family and social environments, which might subsequently drive them to engage in radical actions, such as disputes based on identity. The study revealed that female gang members were involved in violent criminal activities as a result of their ability to evade easy identification. This phenomenon can be attributed to the assertion made by Ferrero (Ferrero & Lombroso, *Criminal Man: With an introduction by Cesare Lombroso*, 2015) that women are generally perceived to have a lower propensity for engaging in criminal behaviour. Furthermore, it is worth noting that the individuals who engage in violent criminal activities in the Kayole area are predominantly

females who are recognized by the general population. The inclusion of women in gangs was motivated by their aptitude for organization and their capacity to provide a broader understanding of situations.

According to a study conducted by Archbold (2018) on Criminal Pleading, Evidence, and Practice, it has been found that women are the primary targets of domestic violence, therefore comprising the majority of individuals who responded to the study. The study revealed that a significant proportion, specifically 70%, of female offenders have experienced prolonged exposure to domestic violence, which consequently contributes to their involvement in conflicts rooted in identity. Based on the findings of the study, it has been observed that certain families experience domestic violence due to circumstances where women are unemployed, lack financial independence, and occupy a subordinate position within the household. Consequently, they frequently become targets of physical abuse perpetrated by their husbands. Furthermore, the husband has a patriarchal belief system in which he perceives himself as being superior to his wife, resulting in numerous instances of domestic violence. Furthermore, as stated by Finnegan (2017), the wife exhibits a mindset characterized by the belief of refraining from discussing personal matters in public, commonly referred to as "not washing your dirty linen in public." Consequently, she tolerates instances of domestic abuse on multiple occasions. According to Flake (2005), certain women experience domestic violence, although their lack of familiarity with legal provisions hinders their ability to explore other avenues for resolving such conflicts.

According to Pizarro (Gruenewald & Pizzaro, 2009), it is posited that women respond to violence by engaging in criminal acts that are rooted in their identity. When faced with intolerable domestic

violence, women resort to lethal force against their offenders. As exemplified during the colonial era, women who could no longer endure the physical abuse inflicted by their husbands resorted to a strategy wherein they patiently awaited their husbands' slumber before perpetrating their demise (Hynd, 2010). Several other women have asserted that they engaged in criminal activities as a means of self-preservation, exemplified by the instance of Wacheke d/o Githinji, who took the life of her spouse due to his frequent acts of physical abuse towards her. The survey conducted by the International Crisis Group (2013) revealed that approximately 23.6% of women sought assistance from their family, friends, or relevant organizations. However, it was observed that 15.6% of the individuals approached for help either disregarded the pleas or actively discouraged the victims from disclosing their experiences publicly. The incidence of uncontrolled domestic violence escalated, leading the wife to resort to severe retaliatory measures. This succinctly elucidates the reason for the higher number of female participants in comparison to their male counterparts.

4.1.3 Educational Background

The study investigated the educational background of the implications of biometrics technology in the management of identity-based conflicts. The majority of the staff respondents had a diploma level of education with a response rate of 75(50%) followed closely by the certificate level with a rate of 40(26.67%). The bachelor's level garnered 25(16.67%) of the total respondents compared to the postgraduate level which was lowest in ranking with a rate of 10(6.67%). The investigation indicated that all respondents had acquired education despite varied levels which enriched the study. The results are illustrated in Table 4.3

Table 4. 3: Level of Education

Level	Frequency(N)	Per cent
Certificate	40	26.67%
Diploma	75	50%
Bachelors	25	16.67%
Postgraduate	10	6.67%
Total	150	100

Source: Field Data,2021

4.1.4 ICT Skill Level

The respondents were probed to indicate their ICT level and the results are discussed below. Table 4.4 displays the levels of ICT skills of the respondents while executing their work in the various institutions named for this research. In the use of biometrics, the ICT skill is key as it's the engine of the searches, verifications and data capture. According to Table 4.4, there were levels of ICT skills that the respondents possessed. The basic level has a response of 70 (46.67) which was the highest followed by the high level of ICT skills category with a rate of 45(30%). Those respondents without ICT skills fall under the none category which had a response of 35(23.33%). From the basic and high levels of ICT skills, we deduce that at least most of the respondents had ICT skills key in handling identity-based conflicts.

Table 4. 4: ICT Skills

ICT level	Frequency(N)	Per cent
Basic level	70	46.6
High level	45	30
None	35	23.33
Total	150	100

Source: Field Data,2021

4.2. Nature and Extent of Identity-Based Conflicts in Nairobi City County

4.2.1 Frequency of Handling Identity-Based Conflicts at Workplace

The respondents were asked whether they have handled cases of identity-based conflict at their workplace. From Table 4.5, the response indicates an overwhelming frequency of 125(83.33%) respondents agreeing that they handle identity-based conflicts at the workplace. Those who negate had a response rate of 25(16.67%) of the total respondents. The results indicated that identity-based conflicts are real in Kenya and are reported.

Table 4. 5: Frequency of Handling Identity-Based Conflicts at Workplace

Response	Frequency(N)	Per cent
Yes	125	83.33
No	25	16.67
Total	150	100

Source: Field Data,2021

In support of the prevention discussion one of the key interviewees added that:

Other than being the instruments of handling and determining identity-based conflicts, the interview response indicated that the majority of the officers had fallen victim to these conflicts either directly or indirectly through financial institutions. (Interviewed on 14th January 2022 at NSSF).

Sedikedes and Strube (1997) suggest that the self encompasses a comprehensive collection of discrete yet interconnected psychological events that are linked to reflective consciousness. It is posited that humans commonly exhibit a desire for a good self-perception, employing various self-enhancement tactics to convince both themselves and others of their inherent value as persons. The outcome of employing this methodology yields an exaggerated perception of one's abilities or importance. According to Sedikedes and Strube (1997), the degree of self-identity an individual possesses is contingent upon the extent of success they achieve in their self-enhancement efforts.

According to De Dreu and Gelfand (2008), recent studies have revealed that individuals with less stable self-identities exhibit reduced capacity to effectively cope with criticism and negativity. According to De Dreu and Gelfand (2008), individuals possessing an unstable self-identity exhibit a higher propensity for escalating conflict compared to those with a stable self-identity. De Dreu and Gelfand (2008) argue that endeavours to uphold a favourable self-identity ultimately give rise to circumstances in which individuals consciously or unconsciously inflict harm upon the self-identities of others. Moreover, De Dreu and Gelfand (2008) argue that individuals bring their exaggerated self-perceptions into conflict situations, resulting in a tendency to perceive themselves as more cooperative than they are while perceiving their counterparts as more hostile. The aforementioned variables contribute to identity conflicts that arise from a perceived threat to one's sense of self (De Dreu & Gelfand, 2008).

4.3. Sources of Identity-Based Conflicts Handled at Workplace

The study sought to ascertain the sources of identity-based conflicts handled at the workplace and the results are displayed in Table 4.6.

Table 4. 6: Sources of identity-based conflicts

Types of Conflict	Daily (N)	Weekly	Monthly
Fraud	100	35	15
Impersonation	110	25	15
Deceased persons	90	40	20
Political conflicts	5	40	105
Misuse of technology	110	25	15
Disaster victims	05	05	140
Terrorism	03	02	145

Source: Field Data,2021

The study found that fraud, impersonation, deceased cases and misuse of technology are identity-based conflicts majorly handled daily. Impersonation is a source of identity-based conflict with a response rate of 110(73.33%) daily,25 (16.67%) weekly and 15 (10%) monthly. Besides, staff respondents stated that misuse of technology was a common affair with 110(73.33%) stating that it occurred daily,25 (16.67%) weekly and 15 (10%) monthly. The study also found out that 90(60%) of the staff respondents stated that cases of deceased were reported daily,40(26.67%) stated that this was experienced weekly and 20 (13.33%) stated that this phenomenon occurred monthly.

The study also found that 100 (66.67%) reasoned that fraud was reported on a daily basis, 35 (23.33%) stated that it occurred weekly and 15 (10%) stated that it occurred monthly.

The study also found that political conflicts, disasters and terrorism were not common phenomena. Out of the total respondents, 5 (3.33%) indicated that political conflicts occurred daily, 40 (26.67%) reasoned that it occurred weekly and 105 stated that it occurred monthly. Additionally, 5 (3.33%) stated that disasters occurred every day, another 5 (3.33%) stated that they occurred weekly and 140 (reasoned that they occurred monthly. Regarding terrorism, 3 (2%) of the total staff respondents stated that terrorism occurs daily, 2 (1.33%) stated that it occurs weekly and 145 stated that it occurs monthly. In essence, these, three, Political conflicts, disasters and terrorism are mostly experienced monthly. The results are illustrated in Table 4.6

These data present a contrasting perspective to Harris (2011), who argues that there exists a variety of viewpoints among theorists about the fundamental origins of workplace conflict. Jaffee (2008) identifies two primary sources of workplace conflict. According to Jaffee (2008), the origin of this phenomenon can be attributed to individual tensions. These conflicts occur when individuals with distinct goals and objectives are required to collaborate within an organization that has a singular goal and objective. A natural tension is there within this interaction (Jaffee, 2008). Another factor that contributes to conflict inside organizations is the division of labour (Jaffee, 2008). This phenomenon can be attributed to the prevalent practice in most organizations when employees are allocated distinct roles within certain departments, a tendency that has been observed to erode cohesion and foster discord (Jaffee, 2008). The author asserts that inside organizations, there are two distinct forms of labour division, namely vertical and horizontal, both of which have the potential to generate conflicts.

Masters and Albright (2002) present a more comprehensive perspective on the origins of workplace conflict in comparison to the narrower focus of Jaffee (2008). The assertion is made that the workplace is particularly conducive to conflict due to the presence of numerous sources of conflict, surpassing those found in many other domains of our lives. The authors elucidate that individuals in professional settings encounter potential conflicts stemming from various sources, including environmental, workplace, and organizational factors, in addition to the individual sources of conflict that are prevalent in other domains of their lives. The approach presented by Masters and Albright may be deemed insufficiently comprehensive, as it neglects to address the fundamental power dynamics already discussed in the analysis of power. De Dreu and Gelfand (2008) have identified three overarching origins of interpersonal conflict within organizational settings. Scarce resources and conflicts of interest are primary factors that contribute to the emergence of resource conflicts. Furthermore, there is a quest to uphold and advance a favourable perception of oneself, leading to the emergence of conflicts related to identity and personal worth. Thirdly, individuals possess a motivation to maintain consensually agreed and socially accepted attitudes and beliefs, leading to socio-cognitive conflicts in the realm of comprehension.

4.3.1 Fraud

The study also found that 100(66.67%) reasoned that fraud was reported daily. basis,35(23.33%) stated that it occurred weekly and 15(10%) stated that it occurred monthly.

The findings agree with DiNapoli (2007), who avers that fraud can occur within the financial system of a company. Huge sums of money are lost with the parties involved grappling with different incidents of stealing the company's money. According to DiNapoli (2007), four elements are involved when an employee is committing fraud including, a need, the opportunity, and

rationalization within the mind of the fraudsters, a low chance of getting caught as well as justification that the results will be achieved from the rationalization. When talking of fraud, it must exhibit three drivers that are described in the fraud triangle.

Kassem & Higson (2012) state that opportunity and capability are elements in the fraud triangle that demonstrates how people involved in fraud are influenced by their stay in the organization. Employees who have already stayed for a long time in the organization usually are found to have gained trust within these companies. These people also understand better the organization's controls regarding fraud. Therefore, it is easy for them to manoeuvre and find ways of undertaking fraud while concealing its capacity to be noticed. Employees having worked in the organization for many years have probably operated in almost all departments. All over these years, the employees have been promoted to different ranks and other employees have started reporting to them. Their position does not warrant the other staff to question their integrity or their actions.

These are circumstances that create an opportunity for such an employee to commit fraud even in the slightest event they may find possible to do so. They are events that can be compared to leaving the safe unlocked because of trusting a person. These open doors are opportunities for the person to carry out fraudulent activities. Motivation and pressure are other elements that drive employee fraud in an organization. For example, an employee with financial problems, divorce or relationship difficulties that are driven by financial factors will most likely commit fraud to take care of these problems. These are circumstances that create a lot of pressure among employees to look for alternative methods of raising income. Like any other crime, fraud usually needs motivation such as greed, financial difficulty or even financial need to enrich oneself (Greve, Palmer and Pozner, 2010).

The rationale behind fraud is another driver of why employees commit such actions of betrayal to their organizations. Fraudsters just like other types of criminals will always give a rationale for their actions. For example, a long-serving employee may get even with the organization and overlook the person in searching for a better candidate. Additionally, employees having served the organization for a long term may feel that they are superior and can play around with the company rules (Chirasha and Mahapa, 2012). Even though the drivers of fraud may be considered theoretical, they happen and have been evidenced in organizations all over the world. However, the opportunity to commit fraud by employees will depend on the type of organization and the effectiveness of the whistle-blowing system (Robinson, Robertson and Curtis, 2012). Therefore, it is important for organizations to be vigilant enough to ensure that their controls are tight as well as the oversight is competent enough to identify events that may lead to the occurrence of such events.

Brytting, *et.al* (2011) states that being able to recognize the drivers of fraud is a good starting point that can help organizations in reducing fraud incidences. Even though assignment and internal controls are good, organizations must recognize that they are dealing with human elements as a measure that can help in preventing the occurrence of fraud. With a primary focus on financial statement fraud, internal auditors are capable of detecting fraud occurring in an organization (Wyk, 2013).

Organizations often exhibit reluctance to acknowledge instances of employee theft, while being aware of the prevalence of such behavior and the occasional success of such attempts. Many firms have a tendency to incur losses, which can ultimately prove to be rather expensive over an extended

period (Raczkowski & Schneider, 2013). The primary cause of financial losses in firms can be attributed to the deceptive behaviours exhibited by employees. Inadequate company performance and insufficient monitoring create an environment conducive to fraudulent activities, wherein employees resort to various methods to misappropriate funds from their employers. The documented instances of fraud merely provide a glimpse into a much larger and more pervasive problem.

The study findings align with the research conducted by Huiras, Uggen, and McMorris (2000), which draws a parallel between fraudulent behaviours perpetrated by employees and their level of job unhappiness. Based on the findings of the research, it was observed that occupations that provided employees with a sense of purpose, encompassing both financial security and opportunities for professional advancement, had a decreased propensity for engaging in fraudulent activities. In contrast, Eseoghene (2010) conducted a study on fraud within the Nigerian context, aiming to identify prevalent forms of fraudulent activities specifically within the banking sector. The research revealed that there was a comparable degree of staff involvement in initiating and carrying out fraudulent activities.

The study revealed that specific instances of wrongdoing are recurrently observed to such an extent that they are considered commonplace. Arjoon (2008) aimed to explain the occurrence of morally questionable behaviour among individuals of high standing by introducing a conceptual framework known as the Continuum of Compromise (CoC). The Code of Conduct (CoC) elucidates that employees have the potential to cultivate mental states that undermine dishonest behaviour as a result of persistent misconduct that goes unaddressed from the beginning. The results of the study also revealed that instances of fraud occur as a result of inadequate ergonomics and individuals' avaricious tendencies.

The outcomes of this study are consistent with the research conducted by Alleyne and Howard (2005), which aimed to ascertain the viewpoints of auditors regarding the characteristics and extent of fraudulent activities. The examination revealed several factors that contribute to individuals engaging in fraudulent activities. These factors include individuals with extravagant lifestyles, individuals with questionable moral values, individuals who are dissatisfied with their current occupation, individuals struggling with addiction, individuals burdened with increased responsibilities, individuals who witness others committing fraud, and individuals who believe that their fraudulent actions will go undetected.

The aforementioned findings are consistent with the assertions made by Murdock (2008), who posits that the presence of pressure plays a significant role in influencing an individual's likelihood of engaging in fraudulent activities. In this context, pressure pertains to the societal expectations surrounding property ownership, engagement in extramarital relationships, and the pursuit of a lavish lifestyle. However, it is important to note that employees may not be compelled to engage in fraudulent activities just due to financial difficulties and lifestyle demands. Certain individuals are motivated by the exhilaration associated with acquiring substantial sums of money through illicit means (Stone, 1990).

4.3.2 Impersonation

Impersonation according to Reznik (2013) is people faking identities or profiles to defraud or harm the people they have imitated. Most of the identification documents producing organs do not have legal authority to prosecute perpetrators instead forward cases to the police to carry out arrests and investigations. For example, an agency like the National Registration Bureau according to the

interview report revealed that once fraud cases are detected are either withheld or not issued to the persons who had applied for them and then forwarded the report to DCI for investigation.

4.4 Whether Identity-Based Conflicts are Created by the System or Individual

The respondents were asked to indicate whether conflicts are created by the system or individuals and the results are illustrated in Table 4.7

Table 4. 7: Nature of identity-based conflicts

Response	Frequency(N)	Per cent
System-based	25	16.67
Individual-based	50	33.33
Both	75	50
Total	150	100

Source: Field Data,2021

According to Table 4.7, identity-based conflicts are created through the system, individuals and both. The system had a response rate of 35(21.2%) whereas individual creation with 55(33.3%) and with 75(45.5%) being the majority. This indicates that the conflicts are either system-made or human-made.

In relation to the above question, one of the key informants through an interview reported that:

Both the system and persons were the creators of identity-based conflicts. The respondents in the interviews sided that most of the errors are caused by mis-feeding by humans and therefore the creation can't be separated in this context making both causes of conflicts. (interview held on 16 January 2022 at NSSF)

4.4.1 System-Based Identity Conflicts

The survey revealed that a proportion of 25 respondents, accounting for 16.67% of the staff sample, expressed that conflicts related to identity were rooted in systemic factors. The conclusions presented in this study are supported by other scholars, including Auerbach and Dolan (2018), Rahim (2001), Champoux (2003), De Janasz et al. (2006), and Mohamad Johdi and Raman (2011). These scholars have identified systemic factors inside organizations that are likely to contribute to conflicts. The factors encompassed in this study encompassed specialization, shared resources, variations in objectives, interdependence, hierarchical connections, disparities in status, ambiguities in jurisdiction, and responsibilities and expectations. In an organizational context, teachers are assigned either general or specific duties. However, disputes may occur when a significant portion of teachers possess specialized expertise. In instances where individuals possess a limited understanding of their counterparts' job duties, discontentment may arise within either party.

According to Rahim (2001), the effective management of organizational conflict entails the strategic utilization of the energies, knowledge, and resources possessed by members of competing groups. This approach aims to foster synergistic solutions to shared challenges or the achievement of overarching corporate objectives. This might also serve as a potential source of tension inside the workplace. The workforce is comprised of both seasoned professionals with extensive tenure and novice graduates who have recently completed training and have up-to-date knowledge in conflict resolution strategies. In the workplace, it is seen that staff members possess varying degrees of specific subject-related knowledge. The specialized training and information possessed by trained staff members are utilized to evaluate and instruct other staff members of lower rank.

The allocation of organizational resources is often constrained, necessitating individuals and groups to engage in competition to secure their fair portion. Hence, it is imperative to distribute resources equitably, as the scarcity of resources increases the likelihood of conflicts arising. Conflict often emerges in business settings when there is a clash between perceived or actual interests. For instance, the presence of tasks at a workplace that entail a substantial effort and are limited to a single computer can significantly increase the likelihood of conflict (Champoux, 2003; Rahim, 2001). The collision may arise due to a difference in corporate objectives, individual aspirations, group affiliations, departmental financial requirements for limited resources, as well as ethnic expectations and demands. Therefore, within a professional setting, conflicts may emerge due to differences in expectations regarding limited resources, such as accommodations, classrooms, and instructional materials like chalk and manila paper.

According to Champoux (2003), it has been observed that groups or departments within a system often possess distinct and incompatible objectives, hence heightening the likelihood of conflict among colleagues. For instance, individuals in leadership positions across diverse divisions possess distinct objectives aimed at enhancing the management of workplace matters. In certain instances, a worker may be required to rely on the assistance of another worker to accomplish a certain task. According to Champoux (2003), in situations where workers are interdependent, there is a tendency to assign responsibility to a colleague when an unfavourable outcome occurs. An instance of potential conflict may arise between departmental leaders and a worker employed in the registration department due to the worker's provision of erroneous customer data. Furthermore, in cases where one department's performance relies on the output of another department, a conflict may arise, particularly when this situation is compounded by limited resources. For instance, when the operations of a department, whose budget has been reduced below what is deemed necessary

for efficient functioning, are interconnected with those of another department that seems to have received a more substantial budget allocation. The individual's cognitive interpretation of inequitable treatment, as observed in the implementation of personnel policies and procedures, or systems of reward and punishment, has the potential to generate heightened levels of tension and conflict.

Frequently, a latent tension exists between managers and labour. This phenomenon can be attributed to the general aversion individuals have against being subjected to authoritative directives. Consequently, managers who exhibit excessive strictness often find themselves entangled in conflicts with their subordinates. As a result, team-oriented approaches and empowerment tactics have gained considerable traction as alternative management methodologies. Auerbach and Dolan (2018) conducted a study. The phenomenon of status differences is a subject of academic inquiry. In numerous systems, including organizational structures, administrators often possess privileges that are withheld from regular employees. For example, managers may derive satisfaction from the flexibility of their working hours, the privilege of making personal long-distance calls without charge, and the opportunity to take longer breaks. According to a management consultant, an effective method for determining the individuals of significance within an organization involves observing the signage in the parking lot and noting the proximity of parking spaces to the office building. The consultant suggests that the size of the sign and its proximity to the building are indicative of the incumbent's level of status. According to De Janasz et al. (2006), it has been asserted that human beings are distinct individuals who exhibit a diverse range of physical, intellectual, emotional, economic, and social disparities. Nevertheless, certain institutions are implementing strategies to foster a sense of equality to mitigate disputes arising from disparities in status.

Jurisdictional ambiguities manifest when there is uncertainty over the delineation of responsibilities within an organizational structure. In situations when the allocation of responsibilities is ambiguous, there is a proclivity for a worker to delegate undesirable jobs to their colleagues.

According to Auerbach and Dolan (2018), the term "role" pertains to the specific behaviors and activities that are anticipated and required of individuals in a work setting. Each educator assumes one or many duties within the educational institution. Typically, the delineation of these roles is established by a confluence of factors, including job nomenclature, delineation of responsibilities, and contractual arrangements between educators and the institution. Conflicts between school administrators and their subordinates may arise when there is ambiguity surrounding the subordinate's responsibilities, leading to divergent interpretations of their job by each party involved.

4.4.2 Individual-Based Conflicts

The research findings indicate that a significant proportion of the staff respondents, specifically 50 individuals or 33.33% of the total sample, supported the notion that conflicts at the individual level can contribute to conflicts based on identification. The individual factors encompass the variations among individuals in an organization (Johdi & Apitree, 2012). According to Auerbach and Dolan (2018) as well as Rahim (2001), the prevailing individual elements linked to personal conflict encompass skill and ability levels, varying personalities, deficient communication, workplace favouritism, and feelings of job insecurity. Individual workers possess unique personalities that influence their approach and execution of tasks. The presence of individuals with varying personalities can give rise to the possibility of interpersonal conflicts (Ndhlovu, 2006).

According to Rahim (2001), as cited in Johdi and Apitree (2012), it is acknowledged that the presence of diverse personalities is an inherent aspect of group dynamics, especially within the context of the workplace. It is commonly observed that there is often an individual among colleagues that proves challenging to establish harmonious relationships with skills and abilities. It is common for employees of a department or work team to possess varying levels of skills and abilities.

Conflict may arise in situations where seasoned employees are required to collaborate with a beginner who possesses strong theoretical knowledge but lacks practical abilities. Auerbach and Dolan (2018) conducted a study. For instance, a seasoned employee who completed their education some years ago and is accustomed to employing traditional instructional methods may encounter a clash with younger, newly hired workers who possess more advanced techniques for delivering instructions.

The phenomenon of personality conflicts refers to the occurrence of interpersonal disagreements and tensions arising from differences in individual personalities. Rahim (2001) acknowledged that the presence of personality conflicts is an inherent aspect of group dynamics, encompassing contexts at workplaces. In most offices, it is a common occurrence to encounter at least one colleague with whom establishing harmonious relations proves challenging. Abrasiveness is widely recognized as one of the most challenging personality qualities. An individual characterized as abrasive typically exhibits traits such as a strong work ethic and focuses on achieving goals. However, they may also display a tendency for criticism and a lack of sensitivity towards the emotions of others. In addition, bothersome characteristics encompass indolence and engaging in gossip. Conflict can be defined as a confrontation between two individuals who are either unwilling or unable to meet each other's expectations.

Auerbach & Dolan (2018), argued that organizational conflict often arises due to divergent perceptions between workers and management in various scenarios. In certain instances, it is plausible that a departmental supervisor may perceive a worker's performance in fundamental instructional tasks as subpar, while the workers themselves may hold the belief that they are executing their duties to the best of their abilities.

According to Johdi and Apitree (2013), disparities in perception within workplace environments might give rise to latent tension between managers and employees. Certain employees exhibit a degree of resistance towards complying with managerial directives, displaying a disinclination to adhere to established protocols or undertake additional responsibilities. Consequently, they encounter difficulties in establishing harmonious relationships with their superiors. This phenomenon can be attributed to the general aversion individuals have against receiving directives or instructions. Shahmohammadi (2014) asserts that department heads often employ an assertive leadership style, which involves exerting pressure on employees to ensure the smooth functioning of office activities. Consequently, conflicts between individuals arise regularly and unpredictably inside the workplace.

Afful-Broni (2013) posits that there exists a subset of workers who harbour a dislike towards specific individuals serving as their administrators. Certain employees perceive themselves as more competent than their superiors, leading to occasional instances of non-cooperation. These workers demonstrate a lack of respect for the hierarchical positions held by their superiors. Individuals have the belief that they possess greater capabilities, particularly if they possess higher qualifications, in comparison to the school head. Diversity: There is a growing trend towards greater heterogeneity. Variations in age, cultural heritage, ethical perspectives, and value systems might potentially give rise to conflicts within the workforce. For example, veteran employees who

harbour a sense of loyalty towards the company may experience conflicts with newly hired staff members who perceive the organization just as a means to advance their careers, according to Rahim (2001). This scenario may also lead to a lack of discipline among employees.

According to Seamuns in Kipyego's (2013) study, certain individuals enter the workforce as a final option after exhausting other employment opportunities. These individuals, who are unable to secure alternative employment, tend to experience difficulty in establishing a sense of professional stability in their occupations. The author additionally contends that these employees are solely motivated by financial compensation, leading them to engage in behaviours such as complaining, murmuring, grumbling, relaxing, and even confronting the school principal, who consistently emphasizes the importance of completing assigned tasks, thereby placing blame on the principal. In contrast, Kipyego (2013) argues that organizational management faces challenges not only from worker indiscipline but also from various behaviours exhibited by departmental heads. These behaviours encompass absenteeism, lateness, dishonesty, fraud, inaccessibility, and authoritarianism. These individuals encounter significant challenges while attempting to establish and maintain discipline within their workforce. The presence of personal troubles at the workplace has been observed to have a detrimental impact on an individual's performance, leading to potential conflicts with colleagues who are burdened with the responsibility of compensating for the decreased productivity. Auerbach and Dolan (2018) conducted a study. For instance, certain individuals encounter difficulties in their personal lives, which afterwards impede their ability to efficiently carry out their professional responsibilities due to a lack of concentration. One prevalent factor contributing to conflict is ineffective communication, resulting in misinterpretations and the creation of barriers (Johdi & Apitree, 2012; Shahmohammadi, 2014). According to Johdi and Apitree (2012), one of the most straightforward approaches to mitigating conflict is establishing

effective communication. The authors posited that an inadequate or excessive amount of communication can result in the emergence of conflict. On one hand, insufficient communication among colleagues results in a lack of comprehensive understanding of their respective intentions, aims, or strategies. The process of coordination becomes challenging, hence increasing the likelihood of misunderstandings, ultimately leading to potential conflicts. Conversely, an excessive amount of communication can lead to misinterpretations, hence giving rise to conflicts. Hitt et al. (2006) conducted a study. For example, individuals must possess a comprehensive understanding when they become aware of a novel field of study that is being introduced to all employees inside the workplace. The author additionally argued that excessive communication, conversely, can lead to misunderstandings that give rise to conflicts as well. According to Shahmohammadi (2014) and Johdi and Apitree (2012), it is posited that effective communication may serve as a viable means to mitigate conflict. To prevent potential conflicts arising from distortions, it is imperative for heads of institutions to engage in regular meetings with all sectors of the organization to effectively communicate and clarify matters (Madziyire et al., 2010).

According to Kroon (2018), the aforementioned conflict is classified as intrapersonal as it pertains to conflicts that occur within an individual. This sort of conflict can manifest as the coexistence of contradictory, divergent, and competing thoughts, emotions, and actions. Intrapersonal conflict arises due to a lack of alignment between an individual and their environment, inadequate time management, an underestimating or overestimation of one's abilities, as well as the assignment of tasks that do not align with personal objectives, interests, values, or abilities. Additionally, a lack of confidence and a sense of powerlessness contribute to this conflict. Hanson (2003) conducted a study. This phenomenon can occur when an individual is faced with the necessity of undertaking a task that is incongruent with their own goals, values, and traits. The resulting tension manifests

in several forms, including uncertainty, hesitation, stress, anxiety, and sadness. The primary factors contributing to intrapersonal conflicts include conflicting needs, role uncertainty, and incongruity between organizational and personal ideals. Put simply, persons who hold similar official positions within a school organization may have varying perceptions of their responsibilities due to disparities in their personalities. In a broad sense, the origins of intrapersonal conflict mostly stem from structural factors. These factors are typically externally imposed and situational in nature, as outlined by Rahim (2001). The issues identified include misalignment of assignments and goals, excessive demands on capacity, an organizational structure that leads to conflicting goals and policies, delayed decision-making, ineffective supervisory tactics, and position-related challenges.

According to Rahim (2001), intra-individual conflict arises when an individual is confronted with two or more contradictory perspectives or concepts, making it difficult for them to readily embrace a single viewpoint. If not managed with caution, interpersonal conflict has the potential to induce feelings of annoyance, stress, and anxiety in individuals. Rashid and Archer (2013) conducted a study. The management process entails aligning the personal objectives and role expectations of individuals with the work requirements and role demands to achieve the goals of both the individual and the company. Rahim (2001) conducted a study. Resolving conflicts at the individual level can also involve the process of reassessment and the subsequent reevaluation of the values associated with the various decision situations. This phenomenon can be attributed to either a shift in the circumstances or the acquisition of fresh perspectives or comprehension by management. Culbertson et al. (2008) conducted a study.

A study conducted in Liverstrong, USA, has brought attention to the occurrence of intrapersonal conflict, which is characterized by conflicts that arise within an individual. These conflicts arise due to an individual's inherent predispositions, beliefs, emotions, attitudes, and values (Tothian,

2013). Intrapersonal conflict arises when an individual engages in internal deliberation or self-reflection over a particular matter. According to Tothian (2014), a range of intrapersonal disputes can emerge within universities, including persons such as students, lecturers, and administrators. Intrapersonal conflicts among students can arise when they are faced with the dilemma of equally appealing goals or conflicting internal needs and motivations. The resolution of intrapersonal disputes through various behavioural patterns has a significant impact on academic attainment. Academic achievement encompasses the attainment of success across several academic fields and co-curricular pursuits, achieved via diligent effort or aptitude.

According to Galaguas (2012), the realization of greatness in sporting behaviour, confidence, communication skills, timeliness, art, culture, and similar attributes is contingent upon an individual's state of being well-adjusted. The process of acclimating to college is of utmost significance in achieving academic success, as there exists a positive correlation between inadequate college adjustment and subpar academic performance, diminished graduation rates, and limited accomplishments in one's personal and professional life. In a study conducted by Galaguass (2012), it was found that a significant portion of stress among undergraduate students in universities in the United States can be attributed to factors such as academic examinations, course content, and the volume of assignments. The study conducted by Stewart and Shamdasani (2015) examined the perceptions of European students on the impact of stress on academic performance. Surprisingly, their findings contradicted the prevailing belief by demonstrating that stress can, in fact, result in enhanced performance. In a research conducted in Europe, a significant majority of 76% of participants reported that stress served as a driving force for increased work efforts, therefore resulting in enhanced academic performance. For several students, the abundance of

assignments induced a sense of positive stress, compelling them to engage in extensive revision and rigorous preparation for their end-of-semester examinations.

The assertion is substantiated by Galaguas' (2012) research. It was also emphasized that a certain level of tension is essential for effective studying. Nevertheless, certain research suggests that a subset of pupils experience academic underperformance due to the excessive burden of numerous tasks. Certain students may encounter stress when they are confronted with intense rivalry from their peers. This can manifest when their classmates appear to effortlessly comprehend subjects and achieve higher scores on examinations compared to themselves. The experience of inadequacy gives rise to internal tensions among pupils, thus leading to heightened levels of stress. According to this analysis, the academic performance of university students is contingent upon their adeptness in effectively navigating intrapersonal conflicts. Intrapersonal disputes are not typically seen as significant factors affecting students' academic performance. This review, however, centers its attention on extrinsic causes that give rise to intrapersonal conflicts.

Hence, it is imperative to prioritize academic attainment once the issue of intrapersonal conflicts has been addressed, as this forms the foundation for the present investigation.

A study conducted at Nigerian universities examined the causes and management of intrapersonal conflicts, recognizing them as an inherent property of the organization. The study also found that these conflicts are partly generated by the organizational structure and systems (Alabi, 2014). The results indicated that the organizational structure and operational mechanisms of universities facilitate the exchange of functional boundaries among students, staff, and administrators. The complexities arising from the ensuing relationships give rise to intrapersonal conflicts. This

phenomenon can be attributed to the fact that individuals belonging to these distinct categories possess varying objectives and anticipations about their engagement with the university.

The non-academic staff members responsible for providing support services may experience feelings of being undervalued by both academic superiors and perhaps highly esteemed students. Additionally, administrators can encounter conflicts with students and staff in fulfilling their duties related to recruitment, admission, examination, and the provision of welfare services for both faculty and students. The academic staff is tasked with a multifaceted dual responsibility encompassing both teaching and research. Although the two entities are mutually beneficial, their interaction has the potential to generate significant friction over the allocation of time, energy, and dedication among individuals (Alabi, 2014). The purposes of students are arguably the most intricate among all stakeholders.

The members of this diverse group experience internal conflicts, but they are obligated to engage in specific learning activities to obtain a degree. Furthermore, there exists a fervent aspiration among late adolescents and young adults characterized by a sense of anger, which drives them not only to seek inclusion into society but also to actively pursue its transformation. This inclination gives rise to a formidable and demanding task of challenging established conventional procedures (Alabi, 2014). The academic performance of students is determined by the university administration.

This study elucidated the underlying motivations and overt triggers of intrapersonal conflicts throughout Nigerian universities as a whole. However, it is necessary to evaluate both the good and negative academic implications to provide a rationale for the present study in Kenyan public universities. According to a study conducted at Egerton University, the social adjustment of

students to the learning environment at the university is significantly influenced by socio-economic characteristics (Kyalo & Chumba, 2011).

A significant observation was made regarding the higher degree of social adjustment exhibited by students hailing from families characterized by low levels of educational attainment, unskilled occupations, and limited monthly incomes in comparison to their counterparts. Nevertheless, it is worth noting that the aforementioned socio-economic determinants did not exert a significant influence on the degree of academic adaptation exhibited by university students. Moreover, the impact of stress on students' academic performance at the university is not limited to one form but extends to several associated factors, including interpersonal interactions and social change. There was a lack of significant disparity in terms of gender in the social and academic adaptation of undergraduate students at the university. Furthermore, there was no notable disparity observed among university students about their social adaptation based on their year of study. Nevertheless, Kyalo and Chumba (2011) observed a notable disparity in the academic adaptation across university students throughout different years of study.

4.4.3 Political Conflict

The respondents were asked to show whether identity-based conflicts increased during the electioneering period, and the results are tabulated in Table 4.8

Table 4. 8: Whether Identity-Based Conflicts Increase During Electioneering Period

Rate	Frequency(N)	Per cent
Yes	110	73.33
No	40	26.67
Total	150	100.0

Source: Field Data, 2021

Based on the findings shown in Table 4.8, it can be observed that identity-based disputes consistently exhibit an upward trend throughout election campaigns. The individuals who asserted that disputes based on identification tend to escalate throughout the period of election campaigns exhibited a response rate of 110 (73.33%), while those who held opposing perspectives had a response rate of 40 (26.67%).

Since the reintroduction of multiparty elections, Kenya has successfully conducted four presidential elections in the years 1992, 1997, 2002, and 2007. In contemporary times, ethnicity has assumed a paramount role as the primary determinant in political struggle. Despite the dissolution of KANU's dominance through party mergers and alliances between 2002 and 2007, the influence of ethnicity on voting patterns in Kenya has not been effectively mitigated. Political parties have been structured based on ethnic affiliations, and the competition for state power is fiercely contested through the mobilization of ethnic groups.

According to Ajulu (2002), political parties in Kenya lack recognized established traditions or ideological patterns. The primary objective behind the founding of the Electoral Commission of Kenya was to enhance the integrity of the election process and diminish the level of government influence over it. The inaugural multiparty elections in Kenya took place in December 1992,

marking a significant political event after a span of 26 years. In the lead-up to the 1992 elections in Kenya, several regions of the country experienced a significant escalation of tribal fighting.

According to Ajulu (2002), a significant number of individuals, around 2,000, lost their lives in the period leading up to the election. These casualties were attributed to the actions of state-sponsored gangs operating in regions where the opposition-held considerable influence. The fragmented nature of the opposition parties presented a favourable circumstance for Moi and the KANU party to exert political dominance in Kenya. The opposition members of parliament (MPs) persistently perceive the single-member constituencies as localized arenas of conflict, where candidates representing distinct political parties engage in competition without establishing a connection between their electoral battles and national politics. Consequently, they failed to form a cohesive alliance aimed at removing the president from office. The Commonwealth Secretariat (2008) reports that civil society, aided by external funders, persistently advocated for democracy and institutional reforms and expressed their intention to potentially boycott the elections.

The 1992 elections, which resulted in the victory of Moi, witnessed a surge in agitation and citizen demand for electoral reforms due to his perceived lack of commitment to implementing such reforms. President Moi made a commitment to the public on December 31, 1995, in response to their calls for reforms by assuring them that the process of constitutional review would commence. Civil society organizations exerted pressure on the government to fulfil its commitment. The formation of a National Convention Planning Committee (NCPC) signifies the establishment of the executive branch of pro-democracy factions, with the primary objective of advocating for constitutional reform. The autonomy of the Electoral Commission of Kenya (ECK) was subjected to scrutiny during the 1992 elections. Multiple reports from election observers have shown that the management of the electoral process by the Electoral Commission of Kenya (ECK) was

deemed to be subpar, as stated in the Commonwealth Observer Group Report of 2003. One aspect that was noted as problematic was the absence of autonomy within the Electoral Commission of Kenya (ECK), namely regarding the method of selecting commissioners and the makeup of the commission (Okello, 2006). Despite the declaration of the 1992 elections as free and fair by observers, albeit with some concerns, there was a significant prevalence of electoral malpractices and rigging.

Instances of state-sanctioned violence were documented throughout many regions. President Moi and the Kenya African National Union (KANU) exerted significant influence over the electoral process and were implicated in orchestrating "ethnic clashes" in areas where the opposition-held strong support. These clashes resulted in the disenfranchisement of a substantial number of individuals, as well as the loss of lives and property. According to Mueller (2011), the electoral process lacked competitiveness. According to observers, the described electoral proceedings lacked the attributes of freedom and fairness, ultimately failing to provide the anticipated triumph for the opposition due to its division along inter and intra-ethnic boundaries. To ensure the credibility of elections, it is imperative to employ a robust and secure system, such as the integration of biometric technology into the voting process. According to the African Election Database on Kenya (2012), President Moi secured his re-election with 40.6 per cent of the total votes. His closest competitor, Kenneth Matiba of the FORD-Asili party, obtained 26 per cent of the votes, followed by Mwai Kibaki of the DP with 19.5 per cent and Oginga Odinga of FORD-Kenya with 17.5 per cent. The formation of the National Convention Assembly and its executive arm, the National Convention Executive Council (NCEC), took place in 1997 to advocate for reforms in Kenya. During the period spanning from May to July 1997, there was a notable surge in popular mobilization spearheaded by pro-democracy factions. The Kenyan populace

participated in the electoral process to democratically elect a president and members of parliament during the second round of multiparty elections. This event took place under heightened political tension between the opposition and the ruling KANU party.

Once again, Moi successfully forged a late-stage parliamentary coalition among opposition parties, while KANU made certain limited constitutional and political compromises in October 1997. However, the issue of presidential powers and the structure of the electoral system were disregarded. The elections occurred during a period of economic downturn, as stated by Barkan (2004). Despite the prevailing economic and social challenges, Moi successfully secured his re-election for a second term within the framework of the multiparty system.

Similar to the circumstances observed during the 1992 elections, Moi's triumph may be attributed mostly to the fragmentation within the opposition faction and their failure to unite around a singular candidate to challenge Moi and the KANU party (Commonwealth Secretariat, 2008). The Kenya African National Union (KANU) secured a slim majority of seats in the National Assembly, although it did not get a majority of the total ballots cast. Various international and domestic election observers, including the European Union, the Carter Centre, and local monitors, have documented that although certain irregularities were present, the election outcomes were generally representative of the majority of Kenyan citizens' preferences. The 1997 elections were marked by incidents of communal violence and allegations of electoral misconduct.

Hence, it is arguable that the elections cannot be characterized as entirely free and fair, notwithstanding the attendance of both domestic and international observers (Barkan, 2004). The tenure of President Moi was marked by a culture of impunity, wherein those involved in illegal activities were shielded from legal consequences for the sake of political advantage. Additionally,

there was a promotion of sectarian private security groups during this period. Two distinct commissions, namely the all-party group and the task force established by the National Council of Churches of Kenya (NCCCK) and the Parliamentary Select Committee, investigated the clashes and reached a shared consensus that the government was responsible for instigating them for political advantage (Ajulu, 2002). The aforementioned strategy, together with Moi's refusal to enact the recommendations of investigative commissions about instances of electoral violence and misconduct, can be interpreted as a deliberate act of negligence.

Consequently, certain marginalized segments of the Kenyan populace nurtured a strong inclination towards seeking retribution and showed a willingness to retaliate even in response to minor instigations (Kagwanja & Southall, 2009). Based on the findings of the Kenyan Human Rights Commission in 2001, it was determined that an approximate total of 4,000 individuals lost their lives, and an additional 600,000 individuals were forcibly relocated throughout the time frame spanning from 1991 to 2001 as a result of violence that was either sponsored or tolerated by the state. A significant portion of the violence took place in the Rift Valley and urban regions, with Nairobi being particularly affected due to the opposition's dominance since 1992 (Kagwanja, 2003).

Frequently, an identity card has been utilized as evidence of citizenship in Kenya. Failure to possess an identity card by eligible individuals leads to restricted access to the rights afforded to citizens, as stipulated in Section 10 of the Registration of Persons Act, section 107 of the Laws of Kenya. The phenomenon of discrimination in the context of engaging in political processes. In Kenya, possession of a national identity card is a prerequisite for voter registration and the

subsequent exercise of the right to vote. Ensuring effective representation policy processes is of paramount importance. The absence of political changes exacerbates the issue of identity, resulting in the persistent occurrence of conflicts based on identity.

4.5 Whether the Government has Records of Cases of Impersonation

The respondents were asked to show whether the government has records of cases of impersonation, and the results are tabulated in Table 4.9

Table 4. 9: Whether the government has records of cases of impersonation

Rate	Frequency(N)	Per cent
Yes	100	66.67
No	50	33.33
Total	150	100.0

Source: Field Data, 2021

From the response of government officers, an overwhelming rate reveals a figure of (66.67%) agreeing that the government has records of cases of impersonation contrary to (33.33%) who negate. The results are illustrated in Table 4.9.

The aforementioned findings align with the conclusions presented in a 2021 report by the Center for Economic Crime in the United Kingdom. Impersonation scams manifest as instances wherein the victim is coerced into remitting payment to an individual of illicit intent who falsely purports affiliation with a reputable institution, as outlined in the report. Potential entities that may fall inside this category encompass law enforcement agencies, financial institutions, religious institutions, and various governmental bodies. In the year 2022, a total of 6,730 cases were reported

wherein individuals engaged in fraudulent activities by assuming the identity of reputable companies.

4.6 Whether the Courts Prosecuted the Perpetrators of Cases of Impersonation

Table 4.10 indicates that the courts have prosecuted the perpetrators of impersonation with a response of 70(46.67%) while those who negate have an overwhelming response of 80 (53.33%).

Table 4. 10: Whether Courts prosecute cases of impersonation

Rate	Frequency(N)	Per cent
Yes	70	46.67
No	80	53.33
Total	150	100.0

Source: Field Data, 2021

One of the Key Informants from the Ministry of Interior had this to say.

The government is now working tirelessly on prosecuting impersonators by operation in every government sector and has prevented millions of frauds and had several arrests in the past two years. It has also invested in advanced security systems to protect customers, including real-time transaction analysis, behavioural biometrics on devices, and technology to identify the claimed identities. (interviewed on 17th January 2022 at NSSF)

4.7 Whether the Country has dealt with Cases of Impersonation

The question was to investigate the actions deployed by the Kenyan government in handling cases of impersonation that are rampant in the country.

Table 4.11 identifies the various actions in place used by the government in handling cases of impersonation. The above finding is in agreement with the report from the Kenya Union of Savings

and Credit Society released in 2021. The report indicated that financial fraud is a notable threat impacting the growth of SACCOs and cooperative societies in Kenya. There have been several cases of theft and misappropriation of funds in past five years. The cases have all been dealt with by the criminal justice system.

According to the Central Bank of Kenya (CBK)'s Kenya Financial Sector Stability Report, SACCOs in Kenya lost about \$10,600 in the year 2020/2021. The attackers targeted vulnerable controls of systems to commit fraud. The CBK report also recommended all SACCOs review and improve their IT systems for better security for members.

Table 4. 11: How the country has dealt with cases of impersonation

How has the country dealt with cases of impersonation?	Frequency (N)	Per cent (%)
Arrests	60	40
Punishment and prosecution of officers	25	16.67
Investigations by the DCI	45	30
Withholding identification documents	20	13.33
Total	150	100.0

Source: Field Data, 2021

Once cases of impersonation are identified, arrests are made with a response of 60(40%), followed by investigations by the Criminal Investigations Department with a response of 45(30%). Punishment and prosecution of officers had a response rate of 25(16.67%) and withholding identification documents with a response of 20(13.33%).

In cases of impersonation, one Key Informant (a forensic officer from NRB legal office) had this to say.

Once cases of fraud are identified during the production of security documents, they are forwarded for further investigation by the Directorate of Criminal Investigation in liaison with the National Registration Bureau. Most of the security documents producing agents do not have a legal right to prosecute perpetrators; instead report the cases for prosecution through the Police department. An agency like the National Registration Bureau according to the interview report revealed that once fraud cases are detected are withheld and not issued to the persons who had applied for them. Punishment and prosecution of personnel working in various state departments involved in the production of security documents involved in corruption, fraud, and impersonation. (interviewed on 17th January 2022 at NSSF)

4.8 The Frequencies of Queries per month on Disputed Identities of Dead Unknown Bodies

The frequency of queries per month for cadavers as per age bracket 1-5 was 25(16.67%), bracket 6-10 had 30(20%), 11-15 bracket had 35(23.33%) while the over 16 bracket was the highest with a frequency of 60(40%). The report indicates that the majority of cadavers with disputes are persons of 16 years and above compared to minors. The results are illustrated in Table 4.12.

Table 4. 12: Age of Disputed Identities of Dead Unknown bodies reported per month

Age of cadavers(Years)	Frequency(N)	Per cent
1-5	25	16.67
6-10	30	20
11-15	35	23.33
Over 16	60	40
Total	150	100

Source: Field Data, 2021

The study also seeks to know the frequency of reported cases of cadavers as per gender and the results are illustrated in Table 4.13

Table 4.13. Gender of Disputed Cadavers Reported per Month

Gender of Cadavers reported per month	Frequency(N)	Percentage
Male	96	64
Female	54	36
Total	150	100

Source: Field Data, 2021

Table 4.13 displays the gender of disputed cadavers reported per month in the study. The response shows 96(64%) of the total disputed cadavers being male whereas 54(36%) were female. This indicated a high figure of male response compared to females.

One of the victims of identity-based conflict had this to say

My identity card was stolen, and my personal information was used to register a new line and stolen money. The fraudsters even blocked my phone and denied me services using my identification document. (interviewed on 25th January 2022 at the Chief's office in Kibera).

4.9 Chapter Summary

This chapter examined the nature and extent of identity-based conflicts in Nairobi City County. It further discussed the sources of identity-based conflict which included fraud and impersonation. It also examined the nature of conflict whereby system-based and individual-based conflict were comprehensively discussed. Finally, the chapter analyzed cases of disputed cadavers reported within the county per month.

CHAPTER FIVE

EFFECTIVENESS OF BIOMETRIC MODALITIES EMPLOYED IN THE MANAGEMENT OF IDENTITY-BASED CONFLICTS IN NAIROBI CITY COUNTY, KENYA

This chapter presents the findings on the effectiveness of biometric modalities employed in managing identity-based conflicts in Nairobi City County based on the research objectives and research questions of the study. The findings were summarized in tables that were derived from the questionnaires, interview questions, and observation checklist. It ends with a summary of the chapter.

5.1 Measures Applied in Solving Identity-Based Conflicts

The section sought to establish the measures applied in solving identity-based conflicts as indicated in Table 5.1

Table 5. 1: Measures Applied to Solve Identity-based Conflicts

Response	Frequency(N)	Percentage	Rank
Use of biometrics	55	36.67	1
Technological advancement	50	33.33	2
Workplace policy	45	30	3
Total	150	100	

Source: Field Data,2021

The study found that out of 150 respondents, 45 (30%) respondents stated that workplace policymaking was a measure put in place to resolve identity-based conflicts. Besides, 55(36.67%) respondents reasoned that the use of biometrics was also a measure put in place and 50(33.33) reasoned that technological advancement was also a measure put in place to resolve identity-based conflicts. According to the findings, the use of biometrics is the most effective method of solving identity-based conflicts, followed by technological advancement and, finally. workplace policies. The findings are in agreement with the views of Hawthorne(2009), who stated that fingerprint biometrics is the most effective method of solving personal identification conflicts.

Table 5. 2: Conventional conflict resolution methods in solving identity-based conflicts

Rate	Frequency(N)	Per cent	Rank
Regional integration	60	40	1
Political reforms.	45	30	2
Religious society	45	30	2
Total	150	100%	

Source: Field Data,2021

Additionally, the study found that 60 (40%) of the respondents stated that the promotion of regional integration was a conventional conflict resolution method, and 45(30%) of the total respondents reasoned that for political reforms. The use of religious society had a response rate of 45(30%)

5.2 Effectiveness of Biometric Modalities in the Management of Identity-Based Conflicts

Table 5. 3: Effectiveness of biometric modalities in the management of identity-based conflicts

Response	Frequency(N)	Percentage	Rank
Total	150	100	

Source: Field Data,2021

The study revealed that 80 (53.33%) respondents stated that biometrics is the most effective method of managing identity-based conflicts, 50(33.33%) argued that biometrics is effective while 20 (13.33%) said that biometrics is less effective. According to the findings, most respondents ranked biometrics as the most effective method of identity-based conflict. This findings is in agreement with research done by Martha Adila in 2012 in Nairobi entitled “Biometric Authentication Systems and Service Delivery in Healthcare Sector in Kenya”.

Fingerprint biometrics has proven to be a reliable method for personal identification over an extended period. One of the earliest documented instances of biometrics, as reported by Joao de Barros, included the utilization of fingerprinting in 14th-century China (Sudha, 2012). According to Barros, Chinese merchants employed a practice wherein they imprinted the palm prints and footprints of children onto paper using ink. This method served the purpose of distinguishing between young children, hence facilitating the resolution of identity-related problems. The utilization of biometrics dates back to approximately 29,000 BC, as evidenced by the practice of cavemen marking their drawings with handprints.

According to Sudha (2012), there has been significant advancement in biometric technology, expanding beyond fingerprinting to encompass several other ways of establishing identification. Several emerging enterprises have entered the industry, introducing innovative approaches and techniques. Biometric technologies employ a certain collection of visual statistics pertaining to an individual in order to ascertain their identity.

While the efficacy of this approach remains largely unverified, new studies in the field of computer science have indicated the potential for reconstructing or regenerating fingerprint pictures using saved biometric templates. In a previous study conducted by Adler (2003), attempts were made to deconstruct facial biometrics based on their associated templates. Building upon this research, Ross et al. (2007) successfully presented a method for reconstructing fingerprints using solely the minutiae points found inside the template. Although it is not possible to fully reconstruct a fingerprint image with the given information, these demonstrations highlight significant concerns regarding the potential privacy implications of emerging biometric technologies. If it becomes feasible to generate "raw" inputs from stored biometric templates, stolen templates would become highly valuable to identity thieves, posing a significant threat to individuals' identities. One has the potential to engage in the act of appropriating a template, generating a novel image, and assuming an identity that is not congruent with their own. In light of these aforementioned difficulties and their interconnected nature, alternative scholars have endeavoured to develop a concept known as "cancellable" biometrics, as described by Bolle et al. (2002).

One of the primary critiques directed towards biometrics pertains to the inherent limitation of individuals possessing a certain number of biometric identifiers, such as two eyes, ten fingers, and

one face. In the event of a compromise of biometric data, the revocation of such data would pose significant challenges, perhaps rendering the task highly arduous or even unfeasible. In contrast to credit card numbers or national identity numbers, which can be easily replaced if lost or stolen, the compromise of a biometric is irreversible, resulting in the neutralization of the biometric data. Consequently, the compromised biometric data becomes unusable and cannot be substituted with an alternative. One of the notable characteristics that render biometrics appealing for identification or authentication objectives is its inherent permanence and resistance to change over time.

The concept underlying cancellable biometrics involves deliberately distorting captured biometric data in a systematic and repetitive manner. In the event that a stored iteration of the initial biometric data is compromised, it is possible to generate a fresh iteration of the same biometric data, duly record the alteration, and, therefore restore the integrity of the individual's identification. The researchers also strive to render the transformation technique non-invertible, hence preventing the recovery of the original biometric image even with a comprehensive understanding of the distortion process (Bolle et al., 2002, p.2735).

Biometric technologies are frequently employed in both international and domestic security settings, therefore making them a subject of periodic discussion in academic literature pertaining to international relations and political science. Hosein (2004; 2005) provides a critical analysis of the international mechanisms involved in making policy decisions regarding biometric travel documents, as well as the underlying politics behind the development of the US-VISIT biometric program. Zureik and Hindle (2004) examine governance mechanisms pertaining to biometrics. Amore (2006) and Epstein (2007) discuss the intersection of biometrics and borders. Liberatore (2007) offers a detailed account of the processes of pluralistic debate and deliberation surrounding biometrics in the European Union. Lastly, Gates (2005; 2006) explores the relationship between

biometrics and security from a cultural studies perspective. In this critique, I analyze one of the author's most recent scholarly works.

In his study, Gates (2006) examines the development of face recognition technology (FRT) as an advanced approach to address the complex security challenge posed by international terrorism in the aftermath of the 9/11 attacks. The inquiry pertains to the rationale behind designating biometric technologies, such as facial recognition technology (FRT), as a viable remedy for the aforementioned issues. How did the topic in question come to be included in the political agenda? The author also examines the aspects that were disregarded or minimized about facial recognition technology to present it as a suitable security measure for addressing the intricate and diverse challenges associated with counterterrorism (p.418). The numerical value provided by the user is 73. Gates outlines and examines three primary reasons that played a role in the rapid adoption of Facial Recognition Technology (FRT) in the aftermath of the September 11th attacks. Initially, the author examines the concept of the "securitization of identity" as discussed by Rose (1999, p.240). This phenomenon emerged before the events of 9/11 and experienced a significant surge in the use of advanced technological measures, notably the incorporation of biometric identifying technologies. The issue of identity was perceived as a challenge that required a technological resolution.

Technology companies have shown a strong willingness to market their products as a crucial element of the emerging security standard. The media extensively covered the subject of biometrics and the many groups advocating for their respective solutions. According to Gates (2006), the utilization of these technologies extended beyond their initial purpose of identifying terrorists, and instead played a significant role in shaping the notion of 'homeland security'. This

resulted in the transformation of political and governmental security challenges into technical issues, closely linked to specific technological remedies (p. 423). Furthermore, biometrics providers made assurances on the capability of Facial Recognition Technology (FRT) to accurately identify potential suspects from a distance and in real-time. Consequently, government homeland security objectives began emphasizing the significance of identifying individuals involved in terrorist activities from a distance and in real-time as a crucial aspect in preventing future attacks. The answer commenced the process of defining the threat. According to Gates (2006, p.424), certain manufacturers and politicians have contended that the implementation of automated facial biometrics may have perhaps averted the occurrence of the 74 9/11 attacks. Nevertheless, these assertions failed to acknowledge the inherently experimental characteristics of the technologies under consideration and also neglected to include the need for a comprehensive assessment of the tensions and contradictions that would need to be addressed for the technology to function well in real-world scenarios (Gates, 2006, p.426).

Gates expresses concern about the perception that these technologies may represent the most recent iteration of persistent endeavours to regulate the inherently volatile societal concept of individual identity, aiming to establish it as a fixed and unchanging entity. Ultimately, she becomes aware of the discourse surrounding 'the countenances of horror'. Political discourse frequently characterizes terrorism as an asymmetrical and elusive menace. However, in the aftermath of the 9/11 attacks, the media was saturated with a plethora of mug photographs featuring the individuals who were implicated in the incident. The aforementioned photographs depicting individuals suspected or accused of engaging in Islamic terrorism have contributed to the perception that terrorism possesses discernible characteristics.

Abu Hamza al-Masri, the former imam of the Finsbury Park Mosque in London, emerged as a prominent embodiment of perceived malevolence. The depiction of him in many news articles, sometimes accompanied by his distinctive features such as a glass eye and a hook hand, consistently appeared alongside reports of his impassioned speeches that finally led to his incarceration. The aforementioned photographs were observed to encapsulate the once shapeless and indeterminate terrorist menace by conferring upon it a relatively stable representation, thereby imbuing it with a sense of fascination as something that might be precisely identified and averted through the utilization of appropriate technological means, including facial recognition systems. Gates' contribution is in the documentation of the non-sequential nature of policy problems and their purported technology solutions, highlighting the presence of a challenging chicken and egg dilemma.

The appropriate design and implementation of a biometric authentication system have the potential to enhance security. Biometrics has been widely recognized as a highly secure method for identifying and verifying individuals, making it the most secure method of authentication (Coats et al., 2007; Zhang, 2001). Smartcard-based systems have demonstrated considerable potential in enhancing security measures. When the system is appropriately configured, biological traits yield distinct and non-duplicable datasets. This feature significantly complicates the process of falsifying another individual's identity, hence guaranteeing precision in the authentication process. The implementation of biometrics addresses the issues arising from the loss or forgetfulness of passwords, hence alleviating the strain on users who no longer need to commit passwords to memory. According to Jain et al. (2004), the implementation of biometrics not only serves as a deterrent against the illegal use of lost or stolen ID cards but also contributes to a reduction in

expenses associated with password administration. A minimal amount of training is required to achieve operational status for a biometric system. Additionally, the implementation of biometric systems that are of high quality and well-executed necessitates only minimum maintenance, resulting in cost reduction (Schneider & Price, 2001).

The findings on the effectiveness of biometrics modalities are in agreement with the view of Pardesi, 2007. Despite the numerous advantages that biometrics offers, such as enhanced security, user ease, and happiness, as well as improved efficiency and cost-effectiveness, it is not exempt from debate (Pardesi, 2007).

The utilization of biometrics has elicited concerns about individual privacy among both prospective and existing users. Biometric systems enable the acquisition of diverse sets of data, encompassing an individual's physical motions, health status, and conducted transactions, among other factors. The phenomenon known as "information creep" refers to the concern that an individual's personal information may be inadvertently shared with a third party and subsequently used for reasons that were not originally intended at the time of acquisition. The challenges associated with the theft and modification of biometric data have led to a lack of trust among consumers towards biometric technologies. According to Grinjpink (2010), there is an indication that the utilization of biometrics has the potential to lead to identity theft due to the unauthorized acquisition of biometric data by malicious individuals. The potential consequences of stolen biometric identifiers are generally more severe when compared to stolen PINs, passwords, or cards, as the latter can be readily canceled, whereas biometrics lack this capability.

Nevertheless, this assertion fails to acknowledge the crucial point that the information saved in biometric-based systems is a mathematical representation in the form of an algorithm, rather than

a direct depiction of the identification (Coats et al., 2007). Furthermore, certain biometric systems opt for the storage of data on smartcards rather than in a centralized database. The absence of comprehensive standards for biometrics applications results in a lack of compatibility among biometric systems produced by various vendors (Berger, 2007). The adoption of biometrics has been hindered by a decrease in pace since potential adopters exhibit reluctance to allocate resources toward a costly system that may undergo further modifications (Lawson, 2003). However, the emergence of the Biometric Application Programming Interface (BioAPI) and the Common Biometric Exchange File Format (CBEFF) is anticipated to bring about advancements in standards. The BioAPI was developed with the intention of offering a universally compatible interface that streamlines the process of software development and establishes a uniform method for interacting with biometric devices (Poore, 2009). The development of the Common Biometric Exchange File Format (CBEFF) aimed to enhance interoperability among biometric systems and streamline the integration of hardware and software components. The anticipated growth of biometric technology usage is likely to be exponential as standards continue to improve and the benefits of biometrics become better understood (Poore, 2009).

5.2.1 Effectiveness of Biometrics at the IEBC Offices

The study sought to ascertain whether biometrics is used at IEBC offices for personal identification and its effectiveness in the management of identity-based conflicts and the results are displayed in Table 5.4.

Table 5. 4: Effectiveness of biometrics in the management of identity-based conflicts in IEBC offices

Response	Frequency(N)	Percentage	Rank
Most effective	11	55	1
Effective	8	40	2
Less effective	1	5	3
Total	20	100	

Source: Field Data,2021

The study revealed that 11 (55%) respondents stated that biometrics is the most effective method of managing identity-based conflicts, 8(40%) argued that biometrics is effective, while 1(5%) said that biometrics is less effective. According to the findings, most respondents ranked biometrics as the most effective method of identity-based conflicts.

5.2.2 Effectiveness of Biometrics at the NHIF Offices

The study sought to ascertain whether biometrics is used at NHIF offices for personal identification and its effectiveness in managing of identity-based conflicts and the results are displayed in Table 5.5.

Table 5. 5: Effectiveness of biometrics in the management of identity-based conflicts in NHIF offices

Response	Frequency(N)	Percentage	Rank
Most effective	22	73.33	1
Effective	7	23.33	2
Less effective	1	3.33	3
Total	30	100	

Source: Field Data,2021

The study revealed that 22(73.33%) respondents stated that biometrics is the most effective method of managing identity-based conflicts, 7(23.33%) argued that biometrics is effective while 1(3.33%) said that biometrics is less effective. According to the findings, most respondents ranked biometrics as the most effective method of identity-based conflicts.

5.2.1 Technological Advancement

According to Jain and Ross (2004, pp.37-38), the utilization of multi-modal systems serves to amplify the challenges faced by forgers, while also highlighting the lack of universality in certain biometric characteristics within a given population. Hence, an individual lacking hands and hence unable to furnish fingerprints may decide to utilize iris recognition as an alternative biometric modality, provided that both alternatives are accessible. Multi-modality has also been recognized as an innovation that promotes privacy. According to FaundezZanuy (2005), the resolution of specific privacy problems can be achieved by the implementation of a multimodal biometric system. This system allows users to exercise their autonomy by selecting from a range of biometric identifiers and rejecting any system that they believe may compromise their private information

(p. 15). This assumption is predicated on the premise that there exists a certain level of agency in the functioning of the systems and that the user possesses sufficient knowledge to exercise informed discernment in determining which system is comparatively less susceptible to vulnerabilities when compared to other available options.

Allowing individuals to opt out of certain biometrics due to cultural or religious considerations will inevitably affect the efficacy and integrity of an identity system. This is because different biometric modalities exhibit varying levels of performance and susceptibility to hacking, hence necessitating careful consideration of their inclusion or exclusion. Ongoing investigation into multi-modal biometrics persists within the technical research domain. One potential approach to address the constraints of biometrics involves the accumulation and utilization of a greater number of these measures. Nevertheless, an increase in volume results in an increase in complexity, accompanied by enduring companions such as susceptibility, the possibility of privacy breaches and identity theft, and several other forms of exploitation. Considering the aforementioned acknowledged limitations of biometric systems, including technological errors, vulnerabilities, and trade-offs that impact their accuracy, the idea of reinforcing biometrics with additional biometric measures raises concerns about attempting to address a problem by amplifying, fortifying, and revitalizing the problem itself. However, it is worth questioning whether an increase in quantity always leads to an improvement in quality.

One could argue that the utilization of digital technologies, such as biometric identity systems, signifies a notable shift in monitoring methodologies. Analogue methods and technologies, such as the initial iteration of closed-circuit television (CCTV) cameras, are being substituted and enhanced with digital systems. These digital systems allow for the affordable and indefinite storage

of information, as well as the ability to retrieve and reprocess it based on an unlimited range of discriminatory criteria. In his study, Martin (2011) conducts a critical examination of the implications of digital technology on the phenomenon commonly referred to as "new surveillance". The process of digitizing surveillance is regarded as a noteworthy advancement for two primary rationales. Firstly, it enables the observation, ranking, and classification of individuals and objects across vast geographical distances and with minimal temporal lag.

The process of collapsing space-time distancing entails the establishment of interconnected and integrated databases, facilitating the storage and comparison of diverse sets of data. Furthermore, the process of digitization enables the automation of various tasks such as sorting, identifying, prioritizing, and tracking subject populations based on their physical attributes, behaviours, and characteristics. Consequently, the human operator's involvement in the surveillance mission transforms actively monitoring and making decisions based on immediate observations to focusing on the development, programming, supervision, and upkeep of semi-autonomous technical systems. The authors contend that the introduction of algorithmic software in the automation process gives rise to further ethical concerns regarding the elimination of human discretion in monitoring.

5.3 Extent of Biometric Modalities Employed in Management of Identity-Based Conflict in Nairobi

Biometric modalities are useful in different sectors of the economy to help solve identity-based conflicts. Therefore, this section sought to establish the different biometric modalities that are used for the identification of persons in the country with specific reference to Nairobi City County. The results are summarized in Table 5.7.

Table 5. 6: Types of Biometric modalities used in identity-based conflicts

Types of biometric modalities	Frequency(N)	Per cent Rank	
Fingerprints	60	40	1
Face recognition	30	20	2
Iris	20	13.33	3
Signature	20	13.33	3
DNA	20	13.33	3
Total	150	100.0	

Source: Field Data,2021

The results in Table 5.7 show that fingerprints as a biometrics modality were the highest in usage with a response of 60(40%), face recognition followed with a response rate of 30(20%), signature with 20(13.33%) whereas Iris and DNA tallied with 20(13.33%).

Based on the results, the participants indicated that fingerprints were the most frequently employed biometric modality, followed by face recognition. In contrast, iris, DNA, and signature were listed as the least utilized biometric modalities in addressing conflicts related to identity. Biometric modalities also aim to emphasize the frequency of inquiries conducted to address conflicts related to identity and the stakeholders who benefit from the identification reports. The study aligns with the perspectives of Nath (2010), who posited that fingerprints are widely recognized as the most efficient biometric modality. This recognition led to their implementation in renowned institutions, such as the Scotland Yard Fingerprint Bureau, the Federal Bureau of Investigation in the United States, and the Central Fingerprint Bureau in India, to address challenges related to contested identities.

5.3.1 Fingerprints

Fingerprint biometrics refers to the utilization of finger-scanning technology. This technique has been tested and utilized for a significant period, making it one of the oldest in existence. The biometric technology exhibits a high level of accuracy. The unique characteristics and arrangement of fingerprints vary among individuals. According to Thakral et al. (2012), they remain unaltered in conjunction with the development of the human body. The inheritance of fingerprint patterns has been seen. The characteristics under consideration exhibit a consistent pattern over the course of an individual's lifespan. According to the Federal Bureau of Investigation (FBI), it has been revealed that the maximum number of common minutiae that can be shared between two individuals is eight.

A conventional fingerprint system typically retrieves a range of 30 to 40-minute points from a single fingerprint that has been taken. The level of accuracy exhibited by fingerprint verification/identification biometric systems is notably high. These systems possess attributes of security, speed, reliability, and user-friendliness. Nevertheless, the utilization of access security necessitates the incorporation of specialized input devices. In the African continent, this approach has been extensively employed for the purpose of conducting elections as well as clinical trials. An illustrative example is the study undertaken by the Centre for the AIDS Programme of Research in South Africa (CAPRISA) in 2008, wherein 185 women were found to have violated the HIV exclusion criterion. This study utilized the Biometric Co-Enrolment Prevention System (BCEPS), which employs digital fingerprinting, as a means to mitigate co-enrolment across various clinical sites. The process of co-enrolment may pose difficulties in terms of double reporting. The researchers utilized the Biomedical and Clinical Exposome Platform System (BCEPS) to

implement a real-time process of identifying and categorizing women who were previously enrolled in a different study. This identification occurred as they entered a trial at a Health Protection Research Unit (HPRU) location. In cases where it was deemed necessary, these women were then precluded from participating in the experiment at the HPRU site.

The potential of this method in mitigating co-enrolment in clinical trials is significant, rendering it a useful asset for future adoption by all trial-conducting entities. The Medical Research Council (MRC) is presently overseeing the coordination of this endeavour in collaboration with clinical trial sites across the nation. According to Harichund, Harispersad, and Ramjee (2013), Despite the overall success of the system, several limitations have been detected. For instance, in the CAPRISA study, it was observed that the system requires individuals to provide an identity card number for recognition purposes. However, it was noted that there are instances where fraudulent identification cards are supplied, hence posing a challenge to the system's efficacy. The study in question was not an exception; rather, the database exhibited an inability to identify individuals of this particular nature.

The case of identical twins also involves the mention of common identification numbers, resulting in the recognition of data as a single entity rather than two distinct individuals. Finally, the database was unable to offer real-time updates on participant information, namely bio-data, which was of utmost importance for the study. The banking sector has also utilized Biometric technology for identity authentication. According to Poee and Labuschagne (2011), this technology is utilized for the authentication of individuals by measuring and analyzing their physical and behavioural traits.

Electronic voting systems have been implemented in Nigeria and Kenya as a means of conducting their respective national political elections. The utilization of the Biometric Verification System in e-voting has been employed for voter identification and authentication. The implementation of automation in the election process incurs significant expenses and necessitates the employment of proficient personnel and the acquisition of advanced technological resources, specifically computers, to guarantee the efficient operation of the process (Okwong, 2012). The study conducted by Okwong (2012) offers suggestions for the Nigerian government to implement the e-voting system as a solution to the numerous issues faced by the country in its electoral process.

Although biometrics offer a robust authentication method by utilizing individuals' physiological and behavioural traits for identification purposes, it is important to acknowledge the existence of certain drawbacks associated with this technology. The effectiveness of biometrics in different identifying methods can be limited at times. For example, fingerprints may exhibit varying levels of saturation, faintness, or difficulty in processing while using certain devices, especially in cases where the skin is either moist or dry. The effectiveness of hand recognition may be compromised in cases where the hand is damaged, resulting in the inability to generate matching results with the photographs stored in the database.

The limited availability of databases and hardware required for iris recognition poses a significant barrier to the implementation of a global iris identification system, as the initial investment required is prohibitively large. Critics have raised concerns about the potential infringement on civil liberties associated with biometric technology. This phenomenon can be attributed to the fact that individuals have been deprived of entry to different regions and countries just due to their lack

of appropriate identification for those specific locations. Additionally, it is important to consider the potential infringement on individuals' privacy that may arise from the utilization of this emerging technology (Bolle, 2004). Individuals hold varying perspectives regarding the potential applications of the biometrics device. One of the primary challenges associated with biometrics is the limited comprehension of its potential and constraints (Pato & Millet, 2010). The global apprehension around biometrics has notably escalated, particularly at the governmental level, following the events of September 11, 2001.

Biometric fingerprinting would be employed for client verification. Specifically, research conducted in India (Thakral et al., 2012) found that fingerprint biometrics were the most effective in these scenarios. The biometric technology exhibits a high degree of accuracy. The unique characteristics of fingerprints encompass distinct patterns and geometrical arrangements that vary among individuals. They remain unaltered in conjunction with the development of the physical form. The categorization of fingerprints is predicated upon the identification of minuscule characteristics. The inheritance of fingerprint patterns has been seen. The characteristics under consideration exhibit a consistent pattern throughout one's lifespan. According to a report by the Federal Bureau of Investigation (FBI), it has been determined that the maximum number of common minutiae that can be shared between two individuals is limited to eight.

The utilization of biometric fingerprint readers holds significant importance in enhancing security measures across several domains. Passwords have the potential to be compromised or forgotten; keys can be unlawfully obtained and replicated. However, fingerprints present a significantly more challenge to copy. The utilization of these technologies has been observed in various sectors,

including banks, government agencies, and private enterprises, as a means to safeguard their facilities (Fox, 2010). The utilization of biometric fingerprint readers, in conjunction with other security access mechanisms such as digital PIN code-locked entries and unique keys, holds significant importance. These methodologies will effectively bolster security measures and mitigate the risk of unauthorized access or breaches. According to Fox (2010), the application of biometric fingerprint readers extends beyond corporate environments and includes home security purposes as well. The presence of user guides detailing the operation and utilization of the biometric system software for payment purposes is crucial for the effective deployment of this innovation inside the company.

5.3.2 Iris

The results presented in Table 5.2 align with the assertions made by Wolf (2017) on the limited adoption and utilization of iris-recognition systems in electoral processes. Currently, Somalia stands as the sole country employing this technology for election purposes, specifically in the region of Somaliland. Iris identification has distinct advantages compared to fingerprint recognition. Firstly, the eye and iris structures are inherently more physically protected than fingerprints. Additionally, the non-invasive nature of iris scanning enables the acquisition of iris data from a distance, eliminating the need for direct contact with any equipment. Consequently, concerns related to dirt accumulation and physical wear are mitigated in iris recognition systems. One limitation is that the accuracy of recognition rates is contingent upon the prevailing illumination circumstances. Additionally, it is worth noting that the cost of iris-scanning equipment remains somewhat elevated (Wolf, 2017).

The limited availability of databases and hardware required for iris recognition poses a significant barrier to the implementation of a global iris identification system, as the initial investment required is prohibitively large. Critics have raised concerns regarding the potential infringement on civil liberties associated with the implementation of biometric technologies. This phenomenon can be attributed to the fact that individuals have been deprived of entry to different regions and countries just due to their lack of appropriate identification for those specific locations. Additionally, it is important to consider the potential infringement on individuals' privacy that may arise from the implementation of this novel technology (Bolle, 2004). Individuals hold varying perspectives regarding the intended applications of the biometrics device. One of the primary challenges associated with biometrics is the insufficient comprehension of its potential and limits (Pato & Millet, 2010). The global and rapid escalation of international apprehension around biometrics, particularly at the governmental level, experienced a significant surge following the events of September 11, 2001.

5.3.3 Face Recognition

Biometric facial recognition system analyzes facial images of human beings for the purpose of authenticating them. The program captures a facial image through the camera and considers its dimensions, proportions and physical attributes to compare and establish the identity Sudha, (2012). In reference to Table 5.2, 20% of the respondents argued that facial recognition was a popular biometric modality used in solving identity-based conflict after fingerprints.

The findings are in agreement with Sudha (2012), who argued that facial recognition systems are one of the popular biometric systems used in personal identification for authentication purposes.

The system measures facial characteristics and stores them in a database for future comparison of personal identification.

A complete biometric system, which comprises fingerprint scanners, Iris recognition devices and facial recognition cameras is used during the registration of persons Sudha (2012). The system has replaced the analogue. Sudha further argued that the number of countries which have adopted biometrics in elections has steadily increased to over 50, with significant differences between regions.

According to Sudha (2012), numerous digital voter registration systems are capable of capturing a voter's photograph and biometric fingerprints. The aforementioned photograph has the potential to be reproduced on voter identification cards or voter registries and thereafter utilized to generate a biometric template suitable for facial recognition systems. Incorporating facial recognition alongside fingerprint recognition has the potential to enhance the precision of a system. Nevertheless, the acquisition of high-quality photographs necessitates the utilization of optimal lighting circumstances, as well as the capture of images featuring a facial expression devoid of any discernible emotional bias. The author further posited that obtaining high-quality photographs, particularly in field settings, poses significant challenges. Consequently, the author advocated for the incorporation of facial recognition systems with fingerprint-recognition systems.

5.3.4 Signatures

According to the data presented in Table 5.4, the study revealed that the modality of signature was the least frequently utilized in instances of identity-based disagreement, accounting for only 13.33% of occurrences. The findings of this study align with Sudha's (2012) assertion that an individual's signature can exhibit purposeful or inadvertent variations, hence limiting its efficacy in the context of personal identification. According to Sudha's (2012) investigation on digital signature and fingerprint biometrics, it was suggested that electronic signature pads could collect

signatures, notwithstanding their infrequent utilization in voter registration processes. However, the utilization of voter signature photos remains valuable for generating voter identification cards, primarily to visually compare them with the signatures present on the voter list.

5.3.5 DNA

Deoxyribonucleic acid (DNA) serves as the repository of comprehensive instructions and information about the construction and composition of an organism's physical structure. The process of DNA matching biometrics involves the comparison of real samples rather than relying on pre-existing templates. DNA identification relies on methodologies that utilize non-coding tandemly repetitive DNA sections. A DNA profile is generated through the use of fundamental molecular biology techniques and afterwards juxtaposed with the DNA profile of the individual under scrutiny in order to facilitate identification. Sudha (2012).

Based on the data presented in Table 5.2, it was found that 13.3% of the participants indicated that DNA is among the biometric modalities employed for resolving problems related to identification. The present study's results align with Nguyen's (2013) research titled "DNA Testing Is the Most Effective Procedure to Solve Crimes," which presents a case study in the United States whereby DNA analysis is predominantly employed for the investigation of violent crimes. The utilization of deoxyribonucleic acid (DNA) to identify, confirm, or exonerate individuals has become a fundamental practice inside numerous law enforcement agencies. The investigation of violent crimes has emerged as a highly efficacious process. Additionally, it has emerged as a viable strategy for enhancing the rate of successful investigations in cases involving serious offences, specifically those about sexual assault. The efficacy of DNA in the context of violent offences has

prompted endeavours to extend the collection and analysis of DNA evidence to encompass other categories of criminal acts, such as property crimes.

In contemporary times, there has been a growing contention around the utilization of genetic material, specifically DNA, to construct genetic profiles of individuals involved in criminal activities or under suspicion. These characteristics possess the potential to serve as distinctive markers due to their tight association with racial profiling. Since the introduction of forensic DNA profiles, these profiles have not only been utilized to exonerate a significant number of individuals who were wrongly condemned but have also served other purposes. A portion of the individuals in question were incarcerated on death row, while others have endured lengthy periods of imprisonment for offences of rape that they were ultimately found innocent of committing. In many instances, law enforcement agencies can resolve cold cases by apprehending individuals who have committed sexual assault or other offences, relying on the presence of genetic evidence left at the scene. The aforementioned process involves comparing the DNA profile under consideration with the existing database (Ossorio & Duster, 2005).

The introduction of fabricated DNA evidence into a crime scene has the potential to generate more challenges than resolutions for law enforcement organizations. Scientists can employ similar methodologies for extracting DNA sequences in genetic testing to obtain DNA from many sources, such as a discarded cup, cigarette butt, used tissue, hair follicle, or any item that has been utilized by an individual to generate a DNA sequence. This extracted DNA can afterward be deliberately introduced into a crime scene. Tania Simoncelli, a science advisor affiliated with the American Civil Liberties Union, expressed concern about the implications of these recent findings for dispute

settlement. According to Pollack (2009), the utilization of DNA analysis technologies in the criminal justice system renders the act of planting a faked DNA sequence at a crime scene comparatively more feasible than that of a fingerprint. The researcher posits that this particular effect serves to intensify identity-based disputes to a greater extent.

5.4 Verification Queries on Personal Identification

The study sought to know about the verification of identification documents such as National Identity cards at NRB from different agencies for authentication purposes so as to establish the genuineness of the documents.

The finding indicated that NRB received queries of personal identification at the workplace with a positive response rate of 110(73.33%) while 40(26.67%) objected not to have received any queries.

Table 5. 7: Verification queries on personal identification

Rate	Frequency(N)	Per cent
Yes	110	73.33
No	40	26.67
Total	150	100.0

Source: Field Data,2021

The study is in agreement with Hawthorne (2009), who argued that questioned fingerprints particularly those on identification documents should be verified with the fingerprint stored in a recognized database so as to establish the truth about the owners of such prints.

5.5 Agencies that Partner with National Registration Bureau for Identity-Based Conflict

Queries

The stakeholders that partner with the National Registration Bureau in identity-based conflicts are NSSF, DCI, IEBC, banks, KRA and Medical insurance schemes. The study sought to establish the agencies that partner with NRB to help them solve identity-based conflicts in their departments to prevent fraudulent activities. The study found that DCI, IEBC KRA and majority stakeholders with an equal response of 30(18.1%) while NSSF, Banks and Medical Insurance schemes with 25(15.1%). All these results, according to the respondents are involved in queries related to identity.

Table 5. 8: Stakeholders of the National Registration Bureau

Agencies/stakeholders	Frequency (N)	Percentage	Rank
KRA	30	18.1	1
DCI	30	18.1	1
IEBC	30	18.1	1
BANKS	25	15.1	2
NSSF	25	15.1	2
Medical Insurance Schemes	25	15.1	2
Total	165	99.6	

Source: Field Data,2021.

5.6 Management and Resolution of Identity-Based Conflicts

The study sought to establish whether the queries received at NRB concerning personal identification were solved or not. An overwhelming number of respondents stated that the cases received to solve identification conflicts are successful with a rate of 130(86.67%) compared to those who negate with a response rate of 20(13.33%). This indicates that identification conflicts are majorly solved through the verification of identification documents.

Table 5. 9: Response on whether queries are solved

Rate	Frequency(N)	Per cent
Yes	130	86.67
No	20	13.33
Total	150	100.0

Source: Field Data, 2021

The study is in agreement with the views of Ross *et al.* (2006), where identity-based conflict was resolved in the year 1903 in a case of identical twins, William West and Will West at a Federal prison in Leavenworth, Kansas. In this case identities of the identical twins were disputed after one of them was found to have been involved in a criminal activity and it was difficult to establish the offender among the two. After a thorough examination and comparison of their prints, it was established that the disputed prints belonged to William West, thereby exonerating Will West.

5.7 Regulatory Body on the Use of Biometrics in Kenya

From the table below, there is no biometrics regulation body to oversee the use of biometrics in Kenya with a majority negative response of 135(90%) compared to those who agree with 15(10%).

When probed further about whether there should be a body to regulate the use of biometrics, the respondents unanimously agreed and stated that when in place, it would handle and solve most cases of identity conflicts.

Table 5. 10: Existence of Biometrics Regulatory Body

Rate	Frequency(N)	Per cent
Yes	15	10
No	135	90
Total	150	100.0

Source: Field Data,2021

This study is in line with the recommendation of Sudha(2012), who recommended that fingerprints professionals should be subjected to a National Bureau of Standards such as the National Institute of Standards and Technology.

5.8 Effectiveness of Huduma Centres in the Management of Identity-Based Conflicts

The study sought to find out if Huduma Centers are effective in the production of identification documents and management of identity-based conflicts in Kenya.

Table 5. 11: Effectiveness of Huduma Centers in the provision of timely identification documents and management of identity-based conflicts

Rate	Frequency(N)	Percent
High	70	46.67
Moderate	50	33.33
Less effective	30	20
Total	150	100.0

Source: Field Data,2021

The study indicated that Huduma centers are highly effective in the timely provision of services with a response of 70(51.5%), moderate at 50(33.33%) and less effective at 30(20%). From the response of high and moderate combined assertively agree that the system is effective in identifying and solving identity-based conflicts.

The findings are in agreement with Mutinda (2017) in a study entitled ‘Strategic Role of Huduma centre initiatives on public service delivery among Residents of Nakuru County, Kenya, ’Mutinda avers that Public service delivery is key in ensuring that the government meets its commitment to the citizens as well as the realization of development. The public service delivery in terms of quality, ease of access, speed of provision and cost element is critical in poverty alleviation and achievement of developmental milestones such as Millennium Development Goals (MDGs) (Okello, 2014). This could either be directly or indirectly through enhancing the availability and affordability of education, health, energy, and information and communication technology services, alleviating poverty and empowering women through entrepreneurial and employment creation opportunities in services enterprises, respectively (Isango, 2012). The government launched the Huduma centre in order to improve public service delivery in Kenya.

According to Korir (2015), the Huduma Kenya is a Government of Kenya multichannel public service delivery strategy that seeks to enhance service provision efficiency through one-stop service provision centres. Therefore, the Huduma Kenya initiative is conceptualized along the concept of integrated public service provision and with an aim of providing integrated public services hence transforming service delivery processes (Korir, 2015). Similarly, Ng'aru & Wafula (2015) indicate that the Huduma Kenya program is an Integrated Service Delivery (ISD) strategy that aims at the delivery of Public Services through a "One Stop Shop" Model with great emphasis on Customer Service Excellence. The Huduma secretariat was instituted through the Presidential Gazette Notice No.2177 of 31st March 2014 which established the governance structure of the Huduma Kenya Programme. Huduma Centres are meant to improve public service delivery in diverse ways. The "one-stop approach" means that diverse services are congregated under a single roof effectively making it possible for service seekers to access it conveniently without moving from one building to another (Ng'aru & Wafula, 2015).

Public service delivery was improved through the use of ICT technologies such as the online e-Huduma web portal to provide integrated services offered by various government ministries, departments and agencies (MDAs) and a unified and integrated channel Huduma payment gateway to facilitate ease of payment for government services, through post-pay. The Huduma Centres' initiatives have been awarded diverse awards, including the United Nations Public Service Award by the United Nations. Others include Best Customer Service in the Public Sector by the Institute of Customer Service Kenya and Best Use of Information, Communication and Technology (ICT) in the Public Sector by the ICT Association of Kenya (Ministry of Devolution & Planning, 2015). The Government of Kenya established *Huduma* centres in 2013 in order to decentralize the service

provision to the citizenry and improve public service delivery (Kiragu et al., 2015). The *Huduma* centres currently offer a set of 45 government services. Among these services include the provision of identity cards, reporting of lost national identity cards, issuance of Kenya Revenue Authority personal identification numbers, and issuance of driving licenses among other functions (Ng'aru & Wafula, 2015).

The *Huduma* Centre serves as a one-stop shop for service provision of government services. The *Huduma* Centre serves as a one-stop shop with diverse changes to be undertaken or introduced (Ng'aru & Wafula, 2015). These new aspects to be introduced include an online e-*Huduma* web portal to provide integrated services offered by various government ministries, departments and agencies and a unified and integrated channel *Huduma* payment gateway to facilitate ease of payment for government services. Other services are the introduction of the *Huduma* platform to offer M-Government services to citizens from their mobile phones and a *Huduma* call centre to provide customer service using a single dialling prefix. Through the *Huduma* Kenya platform, the government aims to enable citizens to access integrated public services via their phones, computers and personal digital assistants (PDA) (Ministry of Devolution & Planning, 2015). The new portal is also expected to enhance service delivery and eradicate graft loopholes. Tenders and vacancies in the public service are also expected to be accessible on the platform. Users were able to directly post their comments and complaints regarding government services.

The *Huduma* centres have revolutionized how the issuance of national identity cards is done in Kenya. The national identity cards were first issued under the Registrations of Persons Act, Laws of Kenya, in 1978 to both male and female Kenyans (Kiragu et al., 2015). This was done through

offices of the registrar of persons offices located within the former districts and divisional headquarters throughout the Republic of Kenya. Since the production of the cards was centralized, the service charter indicated that the waiting time for the cards to be delivered from the printing in the centralized office in Nairobi was 17-37 days from the application date (Ng'aru & Wafula, 2015). However, it was not unusual for Kenyans to wait for more than the stipulated time sometimes running to 2 years.

According to Otieno and Omwenga (2015), the Huduma Centre has recently implemented a revised schedule for the processing of new and replacement national identity cards. This adjustment aims to enhance the efficiency of public service delivery by reducing the processing time to 10 days. In the past, the granting of driving licenses was often conducted at the offices of the road transport department or the offices of district commissioners. According to Otieno and Omwenga (2015), the process of renewing driving licenses was traditionally conducted by the offices of road transport or district commissioners. The Kenya Revenue Authority (KRA) served as the governing body responsible for the issuance of driving licenses in Kenya. The supply of licenses faced difficulty in meeting the designated dates, mostly due to logistical obstacles encountered by the Kenya Revenue Authority (KRA) about the applicants. The introduction of Huduma Centres has greatly facilitated the process of renewing driver's licenses by providing an online portal with a remarkably short waiting time of just 30 minutes.

The issue of documents at Huduma Centre facilities has significantly improved service delivery to the Kenyan population through several means. The provision of documentation at Huduma Centres facilitates service delivery near citizens, hence reducing the need for them to go to large

towns for such services. This not only saves time but also reduces the associated expenses of transportation (Ministry of Devolution & Planning, 2015). The Higher Education Loans Board (HELB) is located in Anniversary Towers on University Way in Nairobi. The Higher Education Loans Board (HELB) operates only from its headquarters located in Nairobi. Consequently, in the absence of Huduma Centres, university students were required to travel to Nairobi in order to receive assistance from HELB. Nevertheless, the Higher Education Loans Board (HELB) has expanded its provision of services to various Huduma centres located in Bungoma, Eldoret, Embu, Kakamega, Kisii, Kisumu, Kitui, Machakos, Meru, Mombasa, Nakuru, Nairobi-GPO, Nyeri, and Lodwar. The documents that are issued in these centres encompass the loan application form as well as the loan compliance certificates (Otieno & Omwenga, 2015).

According to Otieno and Omwenga (2015), the issuing of paperwork at Huduma Centre facilitates the provision of government services in a customer-friendly, non-intimidating, and professionally managed atmosphere. The environment within police stations is frequently perceived as threatening by a majority of individuals seeking their assistance. The negative perception of police stations as a haven for criminals, coupled with instances of corruption in service delivery, contributes to this phenomenon. Hence, the provision of police abstracts and police clearance certificates at Huduma Centres establishes them as the favoured service providers, even in cases where police stations are readily accessible to the general public (Kiragu et al., 2015).

The Huduma Centres are characterized by their efficient operation, which includes the implementation of an automatic queue management system, the presence of courteous and accommodating employees, and the creation of a welcoming atmosphere. The environment and

service delivery in major police stations exhibit a stark contrast in comparison. According to Korir (2015), the issuance of documents via the Huduma Centres enhances the delivery of public services by mitigating the direct and indirect expenses related to accessing government services in centralized urban areas. This is due to the fact that Huduma centres provide supplementary platforms for service provision in conjunction with the primary service points of the parent organization. According to Kiragu et al. (2015), there are instances where Huduma centres are strategically situated in relation to their parent organizations, resulting in cost-effectiveness in the provision of services. For instance, the Higher Education Loans Board (HELB), which has its headquarters located in Nairobi, necessitated students residing in rural regions and attending universities throughout various parts of the country to undertake journeys to Nairobi in order to avail themselves of the board's services. This implies that the students faced various expenses such as transportation, meals, and housing, particularly in situations when it was not feasible to commute within a single day (Korir, 2015).

The issuance of documents from Huduma Centres has resulted in improved service quality and reduced service delivery durations. The presence of centralized service providers, who offer a wide range of services, resulted in a larger client base being handled by these providers daily, which in turn affected the quality of the services provided (Ng'aru & Wafula, 2015). However, the provision of these services via Huduma Centre has resulted in decentralization, hence reducing the number of Kenyan citizens seeking a specific service at a specific location. As a result, there is an increase in the efficiency of service delivery and an improvement in the overall quality of service provided.

In another study, Kariithi (2018) on ‘Strategy implementation practices on performance of Huduma centres in Nairobi City County, Kenya, argues that through the Huduma Kenya platform, the government aims at enabling citizens to access integrated public services via their phones, computers and personal digital assistants (PDA). The new portal is also expected to enhance service delivery and eradicate graft loopholes. Tenders and vacancies in the public service will also be accessible on the platform. Users will also be able to directly post their comments and complaints regarding government services (GoK, 2016). Both local and foreign investments have been hindered or slowed down by the cumbersome bureaucratic requirements from different government agencies before licenses or approvals were obtained. To many Kenyans, obtaining even some of the most basic and simple services, such as a national identification card or a trading license for a small business had become impossible and often led to frustrations (GoK, 2015). However, implementation of initiatives spelled out in the strategic plan of Huduma Centers has remained an uphill task due to challenges from the internal and external business environment, despite the efforts of the Government to implement the initiatives.

5.9 Effectiveness of Biometrics in Kenya

Biometric technology is developed because it can fulfil two functions: identification and verification. In addition, such biometric characteristics cannot be lost, cannot be forgotten, and it is not easily faked as it is inherent in human existence where each other will not be the same, the uniqueness will be more guaranteed. God creates man to have his uniqueness. The parts of the human body are not the same as each other. Hence, parts of the human body are often used to determine a person’s identity.

5.10 Chapter Summary

This chapter has delved into whether biometric modalities are effective in the management of identity-based conflicts in Nairobi City County. This study has established that the most effectively used biometric modality is fingerprints particularly in disputed identification documents, in issuance of National identity cards, curbing cases of impersonation and fraud, and in medical agencies such as NHIF. The study revealed that biometrics offered solutions to the timely provision of identification documents and uniquely identifying individuals. The study revealed that government agencies mainly use fingerprints as a key and effective biometric modality in managing identity-based conflicts. On the other hand, other forms of biometrics that are in use as complimentary to fingerprints are facial recognition, iris, DNA, and signature.

The next chapter provides findings on the challenges of biometric modalities in managing identity-based conflicts in Nairobi City County.

CHAPTER SIX

CHALLENGES AND OPPORTUNITIES OF BIOMETRICS TECHNOLOGY ENCOUNTERED IN IDENTITY-BASED CONFLICTS IN NAIROBI CITY COUNTY, KENYA

This chapter presents a discussion of the findings on the challenges and opportunities of biometric modalities employed in the management of identity-based conflicts in Nairobi City County. It further delves into whether existing policies are adequate in solving identity-based conflicts, whether National Registration Bureau structures affect the timely production of identification documents, and how Huduma centers have aided in addressing the challenges discussed herein. Finally, it ends with a chapter summary.

6.1 Challenges of Biometric Modalities in Identity-Based Conflict Management

The study sought to find out whether the NRB structure affects the timely production of identification documents in Kenya as displayed in Table 6.1.

Table 6. 1: Whether NRB structure affect the timely production of identification documents in Kenya?

Rate	Frequency(N)	Per cent
Yes	100	66.67
No	50	33.3
Total	150	100.0

Source: Field Data, 2021

The study found that an overwhelming 100 (66.7%) of the total respondents agreed that the National Registration Bureau structures affect the timely production of identification documents whereas 50 (33.3%) did not agree.

Results of the study show that the major challenge encountered by the people acquiring identification documents is bureaucracies, which make them victims of identity-based conflicts.

Gesare (2006) argued that existing bureaucracies lead to slow decision-making and ineffective communication systems, lack of adequate policy and legal framework, manual business processes resulting in bureaucratic inefficiencies, loss of records and delays in service delivery, resistance to change, and slow monitoring and evaluation system.

Another challenge is an influx of foreigners from neighbouring countries, who continuously attempt to fraudulently acquire National Identity cards. These issues affect the operational efficiency which forms the basis of strategy implementation. It is important for the NRB's activities and work efforts to directly relate to accomplishing its strategic plan. It will be impossible to implement a strategy if this link is not made. In order to achieve this, the researcher argues that NRB must always refer to its strategic plan whenever they are intending to engage in any program. They should also ensure that enough resources are allocated to carry out their strategic plan. Few resources will tend to stifle the ability of the organization to carry out programs documented in the plan. Employees who will be expected to implement strategies should be fully involved in their development (Gesare, 2006).

The study revealed that the communication systems are slow, thus affecting the implementation of strategies. The department has engaged in improvement on ICT to enhance effective

communication. There is also a lack of adequate policy and legal framework, the Cap 107. Measures are in place to ensure that they are reviewed and updated. A sizeable component of the department's business processes is still manual, resulting in bureaucratic inefficiencies, loss of records, and delays in service delivery. Such processes will also most likely not be compatible or may even provide bottlenecks to the Integrated Population Registration System (IPRS).

The department has put in place reform initiatives like Rapid Result Initiatives (RRI) to enhance service delivery and is pursuing ISO certification. Organizational culture was also viewed as an impediment to successful strategy implementation (Gesare, 2006). This is due to resistance to change, misunderstanding, ignorance, and poor team spirit among some employees. The department has engaged in training staff through seminars and workshops, making them aware of their responsibilities and ensuring that the departmental objectives are in each appraisal form. It was revealed that the monitoring and evaluation system is slow, and a monitoring and evaluation committee has been formed to enhance the same. It was also revealed that the department was faced with the challenge of an influx of foreigners from neighbouring countries who continuously attempted to fraudulently acquire National Identity cards. Measures have been placed in place to curb the same, whereby the department has collaborated with other government agencies like NSIS in carrying out the process of identifying citizens. Vetting committees are also established in various registration centres, whenever necessary.

The study agrees with the studies done in the Netherlands on linking civil registration and identity management systems for civil registration in the Netherlands, which pointed out that bureaucracies affect the acquisition of identity documents.

In the Netherlands citizens of 16 years and above are required to register and be issued with identification card at the municipality where one resides or at the Dutch embassy for citizens living abroad. They are required by law to produce their Birth certificate and parents' identity cards or guardian's identity cards (Dutch Government, 2013). In Malaysia, the Government of Malaysia (2013) stated that citizens shall register at the age of 12 years on production of one's birth certificate and parent's identity cards or guardian's identity card and the person so registered shall receive his/her identity card within 10 days. The registration procedures in Malaysia and the Netherlands are straight and simple; hence, citizens can produce the requirements and register within the stipulated time.

In Kenya, however, the National Commission on Human Rights (2007) noted that there are a number of practices and procedures in the registration process which are not set out either in the parent law or subsidiary legislation. The current legal and policy framework governing the issuance of identity cards is the registration of person act.

However, the efficacy of the registration process is also dependent on other core laws; the constitution and the Kenya Citizenship Act Cap 170 laws of Kenya (GOK,1963). The Registration of Persons Act provides that the purpose of the Act is the registration of Kenyan citizens who have attained the age of 18 years and above. The sixth chapter of the constitution of Kenya is the principle framework of Kenyan citizenship, while the Kenya Citizenship Act, spells out the procedure of acquiring Kenyan citizenship either by registration or naturalization. Essentially proof of citizenship and age are the most important elements of the registration process.

In order to prove age rule 4(2) (a) of the Registration of Persons Act states that the registration officer shall demand the production of a birth certificate or an age assessment certificate issued by

a government medical officer of health, or a baptismal certificate issued by a minister of a recognized religious organization immediately following his birth of some other 12 evidence acceptable to the registration officer. However, for proof of citizenship, the law does not specify what documentation may be used for the purpose and seems to give the Principal Registrar discretion to decide on which documents are relevant for proof of citizenship.

Registration of Persons Act CAP 107 Laws of Kenya stipulates that every person shall present himself before a registration officer and register himself by “giving to the registration officer the particulars specified (GOK, 1963)” Rule 4(2) (b) under the Act without specifics, states that the registrar shall demand proof of Kenyan citizenship from the applicant. Nonetheless, the practice has been to have all Kenyan citizens by birth to prove their citizenship by producing their parent’s identity cards. Citizens, by registration or naturalization, have to produce respective certificates.

The fact that the law (Registration of Persons Act, Cap 107, laws of Kenya) is not specific on this question translates to a lacuna where unlimited discretion is granted to the registration officer by omission. In addition, the rules make it mandatory that persons applying for registration shall, whenever possible do so at the place of domicile or of permanent residence. It is difficult to understand the rationale for such a requirement.

While registration officials maintain that it is not a mandatory requirement it so happens that persons are often required to go to their home districts for registration as part of proving the citizenship of that person (Ibid). Identity card has a crucial link to citizenship and nationality in Kenya and is at the core of determining the extent to which an individual enjoys his/her fundamental rights and freedoms within our borders (KNCHR 2007). Registration of Persons Act cap 107, Laws of Kenya also underscores the importance of ID cards in Kenya. It states that a

person may be required by an authority to produce an ID card when applying for the grant of any license, permit or other documents, or for the exercise of lawful or judicial functions section. Nevertheless, a national Identity card in Kenya is not an entitlement; instead, the law makes it an obligation for all Kenyans who are eighteen years and above to register and be issued with national identity card failure to do so constitutes a criminal offence (Registration of persons Act Cap 107, Laws of Kenya). While the human rights framework guarantees persons the right to a nationality the language of Kenya's domestic law suggests that for one to enjoy the rights and freedoms of citizens, he or she must register and be issued with a national identity card. Since an identity card has attained such an important role it should be issued as a matter of right for all Kenyans. Consequently, lack of or denial of an ID implies denial of the rights and freedom accorded to citizens: violation right to citizenship. Oftentimes, an identity card has been used to prove citizenship in Kenya: lack of an identity card to eligible persons results in limited enjoyment of rights of citizens (Section 10 of Registration of Persons Act cap 107 Laws of Kenya). Discrimination in participating in political processes: In Kenya one needs a national identity card in order to register as a voter and exercise the right to vote. This is important in ensuring effective representation policy processes.

Failure to access an identity card has the consequence of denying a person the right to vote (Article 38 chapter four of the constitution of Kenya). Further, it impedes freedom of movement; in certain circumstances, persons without identity cards are not allowed to move freely within their country. Some experience police harassment when they fail to produce an identity card while travelling. The freedom of movement is also curtailed because one requires a national identity card in order to obtain a passport and other necessary travel documents (Article 39, Chapter Four of the

constitution of Kenya). Denial of the right to own property: In other circumstances, a person has to produce an identity card in order to transfer or purchase property. Further, in order to engage in normal business transactions, e.g., opening a bank account, an identity card becomes a crucial document (Article 39, Chapter Four of the Constitution of Kenya).

Denial of the right to access basic social services; lack of an identity card may mean inability to access admission to colleges and universities, acquire a driving license, access banking services, enter government buildings and obtain services from government offices, etc (Registration of Persons Act Chapter 107, Laws of Kenya). In situations of emergency, relief workers, mainly in arid areas, rely on identity cards as a form of identification. Denial of the right to seek and obtain employment: Many employers often demand an ID card without which it is extremely difficult to access employment opportunities according to The Kenya Truth, Justice and Reconciliation Commission report (GOK, 2013).

In Malaysia, the registration of a person's processes and systems are automated hence, identification cards are issued to those registered within 10 days. In territories like Finland, Guatemala, Portugal, Estonia, Belgium and Morocco use of modern equipment has been embraced and therefore registration of persons is done within 10 days (IACSIT International Journal of Engineering and Technology, 2012). However, in Kenya, Identity card applicants do not obtain their identity cards instantly at their application points in the Sub Counties as registration processes are done manually.

They are given waiting slips as their applications are prepared manually and forwarded to Production Centre NRB Headquarters Nairobi where they are verified before identity cards are

produced and sent back to the application points in the Sub Counties to be collected by owners. Although according to the service charter waiting period is not more than 37 days applicants wait as long as 2 years to receive their identity cards.

Given the foregoing discussion, one of the key informants adduced that:

The delay of identity cards at the Production Centre, Nairobi is a common complaint received across the districts in Nairobi City County. For instance, towards the last General Elections in Kenya, there are public outcry. Over 300,000 identity card applicants always are held with potential holders still holding identity card waiting slips as their identity cards are being processed at the Production Centre, Nairobi. This delay is a recipe for identity-based conflicts (Interview on 28th January 2022 at Chief's Office Kibera).

Parliament, in response to the public outcry, passed an election Act amendment bill in 2012 that allowed the usage of identity card waiting slips for voter registration exercises. The former president, Mwai Kibaki, however never signed it into law, and as a result, many Kenyans never participated in the last general elections. Bush (2000) observes that although centralization promotes personal leadership integration, uniformity of action and successful handling of emergencies, it is an impossibility because management would be impossible without some measure of delegation of authority, particularly when an organization is large and complex.

Given that the number of Kenyans attaining the age of registration increases every year coupled with the fact that registration units are also growing in number the Production Centre receives a too big volume of documents to handle in good time as expected by identity card seekers.

Decentralization of the issuance of identity cards to the Counties could ease the congestion and delay in the production of identity cards at the Production Centre Nairobi. The National Registration Bureau, due to lack of automation, contracted the Expedited Mails Services(EMS) to

collect and send identity card applications from the registration offices in the Sub Counties to the Production Centre, Nairobi, collect ready cards and send them to the sub-county registration offices to be distributed to the owners (GOK Strategic Plan,1995). How immediately the transportation of the consignments is taken to their required destinations is dependent on the effectiveness and efficiency of the contracted service provider(EMS). If their services are poor then there would be a correspondent delay in the issuance of National Identification Cards as their actions affect the operations of the registration system (Sachera & Sogani,1980). Centralization as a system has some disadvantages. It yields poor environmental adaptation and hence cannot cooperate with environmental change and adjust accordingly. Management means developing managers and executives. Decisions are taken by two levels of management so middle and lower-level management cannot participate and involved managers are poorly developed. Low motivation and commitment result when employees are not involved in decision-making processes.

Delayed decision at the top level of management occurs due to overload by decision-making and decisions cannot be taken at the right time (Hoffmann, 2011). Decentralization is a better option as it can motivate staff and reduce the long waiting period for identity cards. The delay in the issuance of identity cards denies the people of Kenya their constitutional rights including the right to elect a leader of their choice to a political office. When former president Mwai Kibaki declined to assent amended Election Act Bill 2012 it was only a few days before the closure of the voter registration exercise. This implies that many Kenyans were denied their right to elect leaders of their choice to political positions. Democracy was, therefore threatened by the centralized registration system.

To overcome the scenario, the issuance of National Identification Cards should be decentralized to the Counties. Passports and birth certificates are issued instantly at the application points in the regions and Sub Counties respectively, a practice which has reduced costs and inconveniences to Kenyans. Issuance of identity cards should, therefore follow suit. 2.5 Staff Training and Timely Registration of Persons. Human resource development is meant to enhance and improve basic skills by training staff to grow with the organization and enabling them to make better use of their skills and knowledge (Isa, 2015).

Despite the fact that training and development needs have become very complex an organization has to identify the right people to do the right course at the right time (Willis 1993). Gupta (1997) views training as a selection of the best persons for a job and the first step in staffing.

The selected people have to be trained and developed to make up an effective workforce. Training is an organized activity designed to create a change in the thinking and behaviour of people and to enable them to do their jobs more efficiently (Saksena, 1990). The purpose of training is to enable the individuals to get acquainted with their present or prospective jobs and also to improve their attitude. Training makes individuals more productive and efficient; it makes them more familiar with new machines and techniques by refreshing their knowledge (Gupta, 1997).

Singh (1999) observes that training is needed because of the gaps in knowledge and gaps in knowledge and gaps in technology information. Information gaps include adequate knowledge about professional management, current development and overall future orientation. Gaps in attitude deal with high bureaucratic attitudes, lack of open mind, and assumption of a “know-it-all attitude”. Cole (1997) observes that the benefits of training include high performance since training helps to improve the quality and quantity of work output.

On the other hand, a systematic training programme helps to reduce the time lost and time required to reach an acceptable level of performance. At the same time, it creates uniformity of procedures. Informal training and best methods of performing work can be standardized for work procedure practices to help improve the quality of performance (Saleemi & Bogonko, 1997). It also leads to an economy of materials and equipment. Trained individuals make better work and economize the use of materials and equipment. Wastage of materials and tools is reduced. Training also lessens supervision and greatly reduces the need for constant and close supervision of workers (Saksena, 1990).

The NRB Draft Policy (GOK, 2009) indicates that the department noted that human resource development and capacity building were not adequate and recommended that: newly recruited fingerprint and registration officers be university graduates and be required to undergo not less than three months of theory exposure, two years of practical exposure and two years of on job trained experience. The course content, among others, shall include transnational crimes, ICT, management and leadership counter terrorists' registration, and fingerprint intelligence gathering; officers shall receive local and international training to internalize the world's best practices. The department shall train adequate staff and provide incentives to retain; the department shall be committed to continued training and development of professional skills and management cadre.

6.2 Challenges of Existing Policies and Functionality of Biometrics in the Management of Identity-Based Conflicts

The study examined the challenges of existing policies with a focus on workplace policy. It further examined the functionality of biometrics in the management of identity-based conflicts.

6.2.1 Workplace Policy

The study sought to find out whether the existing policies are enough to make biometrics function well in the management of identity conflicts.

Table 6. 2:Whether existing policies are adequate in solving identity-based conflicts

Rate	Frequency(N)	Percent
Yes	70	46.67
No	80	53.33
Total	150	100.0

Source: Field Data,2020

As illustrated in Table 6.2, the findings revealed that 70(46.67%) of the total respondents agreed that the existing policies are enough to make biometrics function well in identity conflicts while 80(53.33%) disagreed. In this regard, therefore, the study found that the existing policies are not enough to manage identity-based conflicts.

Obi (2012) defines workplace conflict as a manifestation of discomfort and disagreement wherein employees and managers engage in excessive pressure tactics against one another in order to assert their respective demands. Conflict in the work environment is an inherent reality within any organization, as individuals inevitably compete for employment opportunities, positions of authority, recognition, and job stability. Rahim (2012) posits that conflict management involves the establishment of effective methods to mitigate the negative consequences of disagreement and increase the beneficial aspects in order to improve the learning and effectiveness of an organization. The management of conflict is a highly significant activity that may be implemented in various ways inside companies

According to Jehn and Bendersky (2013), a third party refers to an individual who provides procedural assistance to facilitate the resolution of conflicts between individuals or groups, with a focus on offering procedural support to the disputing parties. According to Gregory (2014), the involvement of a third party may be necessary when the parties involved in a conflict are unable to resolve it without external assistance. The author additionally suggests that a mediator assists in resolving the dispute by facilitating and providing information and options but ultimately defers the final decision to the parties involved, as the effectiveness of mediation diminishes as the intensity of the conflict increases. Henry (2009) asserts that the utilization of compromise as a tactic is a prevalent approach for effectively navigating conflicts, as it involves reaching a mutual agreement by partially aligning with the perspectives or demands of the other party. The primary aim of establishing the framework of conflict control inside an organization is to develop a proactive strategy for identifying conflicts at their early stages. The escalation of conflict situations is often allowed to reach nearly unmanageable levels before any action is taken, often resulting in a situation where peaceful and procedural means of resolving the conflict are no longer viable.

According to Awan and Anjum (2015), effective management of communication strategies can facilitate open and collaborative decision-making, regular feedback, and timely resolution of conflicts. Engaging in open communication and collaborative efforts enhances the flow of innovative ideas and strengthens professional relationships, hence potentially boosting employee morale. The use of standard criticism and strategic objectives of disagreement holds the potential to improve employee satisfaction and job performance. The negotiation method employed in the workplace is widely recognized as a prominent approach for understanding and resolving conflicts, particularly when the conflicting parties share slightly common and partially divergent objectives

(Shalley et al., 2014). According to Verma (2015), negotiating strategy refers to a systematic approach employed to reach a compromise or agreement while minimizing conflict and disagreement. The concept of organizational design encompasses the ability to transcend current ideas and make decisions, hence facilitating the development of an effective performance plan for an organization. This is achieved by establishing targets that subsequently drive the overall performance of the organization.

According to interview reports from officers handling biometrics revealed that:

The level of computer skills needed in making advanced searches in biometrics use is still at a low level. Most officers can handle only simple searches whereas in complex technological criminal activities need high technological advancement which lack in the country. The second point mentioned was corruption which plays a key role where officers in charge of biometrics alter the reports and give wrong information, thereby creating room for false judgements. In addition, the government structures especially in identification bodies involve many processes to be followed which affect the timely provision of identification documents, reports and solving conflicts (Interview on 26th January 2022 Huduma Center Eastleigh).

6.3 Quality of Biometric System and Identification of Persons

Majority of the total respondents agreed that the quality of the biometric system negatively affect the identification of persons with a response of 120(80%) compared to 30(20%) who disagreed.

Table 6. 3: Quality of biometric systems

Quality rate	Frequency(N)	Percent
Yes	120	80
No	30	20
Total	150	100

Source: Field Data,2021

In support of the findings, one of the respondents averred that:

The quality of biometrics taken for identification must be clear and of the required standard to avoid errors and blurred biometrics that cause mismatching and wrong identification. (Interview on 26th January 2022 at Huduma Center Eastleigh)

6.4 Level of ICT Skills and Expert Analysis of Biometric Data of Persons in Identity-Based Conflict

The study sought to ascertain whether the level of ICT skills affected the expert analysis of biometric data of persons in identity conflict. The respondents agreed with a majority response that ICT skills affect the expert analysis of biometrics with a rate of 130(86.67%) compared to those who negated at the rate of 20(13.33%). The results are illustrated in Table 6.4.

Table 6. 4: Effect of ICT Skills on Expert Analysis in Identity-Based Conflict

Effect	Frequency(N)	Per cent
Yes	130	86.67
No	20	13.33
Total	150	100

Source: Field Data,2021

The majority of the respondents agreed that the level of ICT skills determines the rate at which analysis of complex biometrics can be handled. ICT skill is key in advanced analysis which requires technological know-how to handle the biometrics.

The aforementioned findings align with the perspectives of Listyarini, Ratnaningsih, and Yuliana (2016), who assert that Information and Communication Technology (ICT) has been characterized by different scholars using diverse terminology. According to Listyarini, Ratnaningsih, and

Yuliana (2016), the term ICT encompasses the utilization of technology to access, collect, manipulate, and present significant information.

According to Kioko et al. (2015), information and communication technology (ICT) is a technological tool that facilitates the collection, processing, organization, and display of information coherently and understandably. Information and Communication Technology (ICT) finds use in several domains, with a shared characteristic being its widespread adoption as a technological tool that enables the efficient transfer of information through diverse electronically supported communication methods, hence enhancing accessibility and facilitating decision-making processes (Koltay, 2016). Concerning the subject matter at hand, it can be contended that financial management automation pertains to the mechanization of public financial processes, encompassing the entire spectrum from budget formulation to budget implementation. This entails the utilization of a comprehensive, integrated system for financial management across various government ministries and other entities that receive financial allocations from the national treasury (Kirmani, Wani, & Saif, 2015).

The application of information communication technology in financial management allows organizations to establish a more conducive working environment and enhance their service delivery. Information and Communication Technology (ICT) serves as a mechanism that facilitates contemporary global corporate competitiveness, with a primary emphasis on enhancing efficiency and delivering high-quality customer service (Al-Rahimy, 2016). After careful examination of various factors, it is generally acknowledged that private and public organizations should prioritize the integration of information and communication technology (ICT) as a means to enhance operational efficiency, improve service delivery, and gain a competitive advantage in

the market. Furthermore, information and communication technology (ICT) serves as a medium employed by governmental entities to facilitate the populace's access to information pertaining to government accountability and transparency (Nkeobuna & Ugoani, 2017).

The utilization of computers in the control process often results in enhanced efficiency by reducing waste and improving output quality. This improvement outweighs the potential high costs associated with computing, as stated by Ashcraft, Kuhn, and Cooren (2009). Additionally, the use of this measure has the potential to enhance the safety standards of a given process. This advantage holds immense value in terms of financial implications and serves to mitigate the risks associated with time and distance (Baylis & Smith, 2001). Due to their efficiency, speed, and ability to generate high-quality outputs, computers are conducive to service charter compliance. It is worth noting that most individual registration processes are carried out manually by the National Registration Bureau. This allows for the passage of time and distance, which is purportedly responsible for the perceived delay in the issuance of identity cards.

The provision of services by the Government of Kenya has frequently been substandard, as evidenced by the sluggish delivery of various services, instances of corruption in service provision, the misplacement of crucial files, and the bureaucratic structure of a centralized government service infrastructure, among other obstacles (Mwangi, 2015a). Several factors have been identified as potential causes for inadequate service provision. These factors include insufficient training of the workforce, relatively low educational attainment among a significant portion of government employees, a negative working culture, instances of corruption, diminished morale, an excessively large public sector, and limited adoption of advanced information and communication technology in service delivery (Onyango, 2015). Over the course of time, the

government has implemented many programs with the aim of enhancing the quality of service delivery. The initiatives implemented in several ministries encompass the Rapid Results Initiative, service charters within the Results Based Management (RBM) framework, performance contracting, and the integration of ICT services (Simiyu, 2012). The Government of Kenya implemented the service charters, also known as Citizen Service Charters, in 2004 as a component of the Results Based Management system. The citizen charter is a formal document created by a public institution that delineates the characteristics, standards, and extent of services that citizens are entitled to receive from the institution. Additionally, it provides guidance on the process of lodging complaints or offering suggestions for enhancing the services provided (Malango, 2013).

The study additionally highlighted that when a business allocates resources towards enhancing the knowledge and abilities of its employees, this investment yields a return in the form of increased productivity and effectiveness among the workforce. The primary objective of training and management development programs is to enhance the competencies of employees and bolster the overall capabilities of the firm. Nevertheless, the scope of the research was limited to the analysis of strategic planning, specifically within higher education institutions in Kenya. However, it did not encompass an investigation into the correlation between strategy execution techniques and the performance of Huduma Centres in Kenya. In a study conducted by Machuki (2005), the focus was on examining the challenges associated with strategy execution within CMC Motors Group Ltd, located in Kenya.

The study suggested that the timely provision of training and the appropriate management of change are crucial elements for the successful implementation of strategies. This study had several

limitations, including a small sample size that restricted the generalizability of the findings to the entire population. Additionally, the study adopted a holistic approach in examining the independent factors, rather than considering them from an individualistic standpoint. The scope of the study was restricted to examining the obstacles associated with strategy implementation specifically inside CMC Motors Group Ltd, with no consideration given to the Huduma Centre. The impact of strategic planning on organizational performance was examined by Andalya (2008) through a case study conducted at Equator Flower farm in Eldoret East District, Kenya. Nevertheless, this research was limited to analyzing strategic planning inside flower enterprises located in Eldoret, Kenya. Furthermore, the study only studied some variables in a partial and isolated manner.

According to a study conducted by KIPPRA in 2013, internal and external factors played significant roles in the process of plan implementation. The process of institutionalizing and conceptualizing strategy played a pivotal role in the successful implementation of strategic initiatives. Additionally, the research revealed that the presence of management support and the proficiency of employees were significant factors that contributed to the successful execution of strategies. However, it is noteworthy that the study did not examine the four variables that are the focus of this investigation. The study encompassed a broad range of topics and encountered challenges in selecting a representative sample. The chosen methodology for data analysis was deemed inappropriate. The utilization of multiple regression was employed to establish the interrelationships among variables. The study conducted by Nduko (2008) examined the strategic approaches employed by international multinational businesses operating in Kenya. Nevertheless, the study failed to consider the crucial determinants that influence the implementation of solutions.

The study's recommendations were not derived from the study's findings. The research utilized a comprehensive survey method to assess the entirety of multinational corporations operating in Kenya.

In a study conducted by Odhiambo (2006), an investigation was undertaken to analyze the difficulties associated with the execution of strategies within nongovernmental organizations. The research highlights that internal variables constituted the primary obstacles to the successful adoption of new abilities for employees in the context of strategy execution.

Factors such as leadership, resource allocation, and staff capabilities were identified as contributors to the suboptimal execution of the strategy. The study concluded that strategic leadership had a crucial role in determining the successful execution of strategies. However, it has been observed that the factors of this study were examined collectively in order to assess the effectiveness of Huduma Centres in Kenya.

Furthermore, according to Jehad et al. (2012), leaders without knowledge and abilities are prone to experiencing failure in the realm of plan execution. The successful execution of defined plans among employees is contingent upon the leadership's capacity and inclination to effectively guide the transformation process. Nevertheless, it should be acknowledged that the scope of the study was limited to small firms located in Middle Eastern countries.

6.5 Involvement of Religious Actors in Solving Identity-Based Conflict

The study sought to establish whether other conventional methods such as the use of religious actors can help in solving identity-based conflict. The majority of the respondents agreed that

religious actors have played a role in solving identity-based conflict as illustrated in Table 6.6 with a rate of 90(60%) compared to those who negated at the rate of 60(40%).

Table 6. 5: Involvement of religious actors in solving identity-based conflict

Rate	Frequency(N)	Percentage
Yes	90	60
No	60	40
Total	150	100

Source: Field Data,2021

According to Gopin, religious traditions possess a dynamic nature and have the potential to undergo significant transformations as a result of discourse and the impact of authoritative figures. Moreover, religious entities are assuming a progressively significant and beneficial function in the resolution of global disputes. Hence, it is vital to comprehend not only the pertinent scriptures of a religious framework but also the living adherents themselves. It is imperative to comprehend the allure of extremism, as well as the intricate dynamics between religious values and institutions.

Numerous theoretical frameworks have been developed to elucidate the nature of conflict and its determinants. However, a comprehensive understanding of the intricate relationship between religion and conflict remains elusive within the existing body of scholarship. The Instrumentalist theory has been employed as a framework for elucidating how identities, such as religious affiliations, can exert an influence on the occurrence and escalation of conflicts. It is imperative to acknowledge that the instrumentalist approach does not imply the inherent significance of religion in politics. Instead, its purpose is to elucidate instances in which it has not been prominent in recent years. Therefore, this phenomenon can be observed in situations where previously dormant

religious divisions are reactivated, as well as in situations where these divisions are newly politicized.

According to Schreiter (2010), Christian peacebuilders are guided by the Biblical ideals of truth telling, forgiveness, peace, and justice in their mission of peacebuilding and reconciliation. Lederach (1997) presents the following principles. The author posits that the process of reconciliation encompasses the recognition and acceptance of factual events, the endeavour to rectify past injustices, the pursuit of justice, and the act of granting forgiveness as an act of charity towards the wrongdoer. The theories put forth by Lederach (1997) and Schreiter (2010) proved valuable in the present study, as they facilitated the identification of suitable approaches for peacebuilding and reconciliation in the context of Kuresoi. Truth is considered to be a fundamental prerequisite for the processes of forgiveness and reconciliation. In order to achieve reconciliation, it is important to possess a comprehensive understanding of the individuals responsible for the dispute as well as the underlying factors contributing to its occurrence, as stated by Chapman (2001). Chapman argues that the disclosure of truth plays a crucial role in the process of healing, contending that interactions characterized by forgiveness on the part of victims and genuine sorrow on the part of offenders are vital in fostering reconciliation.

The truth-seeking process adopts a victim-centred perspective, to investigate the events, understand their causality, and identify the responsible parties involved. The methodology aims to ascertain veracity through the victim's testimony and narratives of affliction. Chapman's (2001) study contributed to the identification of religious strategies that might be employed to foster peace and reconciliation across ethnically diverse regions. According to Lederach (1997), truth-seeking provides individuals with a platform to openly communicate their experiences of trauma, loss,

grief, indignation, and the enduring memory of injustices suffered, both individually and collectively. The dissemination of truth serves as a preventive measure against the escalation of conflict and the perpetuation of cycles of violence and retaliation. Another objective of the pursuit of truth is to achieve a harmonious integration of diverse truths and memories, to construct a shared memory and a communal narrative that transcends the narratives of any one group. The collective recollection and storytelling serve as the fundamental basis for a mutually envisioned trajectory. The theories put forth by Lederach (1997) were of significant importance in the context of this study, as they underscored the fundamental role of truth in facilitating processes such as healing, accountability, forgiveness, and reconciliation. One of the challenges associated with the pursuit of truth is its victim-centric nature, as individuals have the agency to selectively disclose information. The inclusion of the remark regarding truth-telling enhances the scholarly value of this study, as it underscores the crucial role this strategy plays in facilitating peacebuilding and reconciliation efforts within conflict-affected regions.

The concept of acknowledgement, as discussed by Lederach (1997) and Montville (1998), is rooted in the truth component of the reconciliation process. According to Montville, individuals have challenges in the process of forgiveness and reconciliation unless there is a deliberate and transparent recognition of the harm and suffering experienced. Acknowledgement plays a crucial role in the process of reconciliation, according to their perspective.

An essential prerequisite for achieving reconciliation in cases where a significant number of individuals were part of mutually harmful collective violence is the establishment of an open and collective recognition of the injuries and losses incurred. One potential obstacle in the process of acknowledgement lies in the fact that individuals who become aware of certain truths may

experience anger and an increased resistance towards releasing the pain they have endured. The long-term credibility of truth and acknowledgement is diminished when not accompanied by other measures of concrete restorative justice. The theories put out by Lederach and Montville played a significant role in this study since they contributed to the proposal of other actions, such as justice, to complement the act of acknowledgement. According to Lederach (1995), the concept of justice encompasses the endeavour to achieve restoration, address injustices, and establish equitable and fair relationships.

The pursuit of justice encompasses the act of advocating for individuals who have been subjected to damage, openly acknowledging the injustices that have been perpetrated, and taking appropriate actions to rectify the situation. The emotions expressed by Lederach were found to be valuable in this study, as they highlight the need to address the experience of justice as a fundamental human need. This approach is crucial in mitigating the occurrence of ethnic conflicts, not only in Kuresoi North but also in other regions impacted by similar conflicts. According to Zehr (1990), the concept of justice is considered a requirement for achieving closure. According to Pope Paul II's assertion in 2002, the presence of justice is a prerequisite for the establishment of peace, while forgiveness is an essential component for the attainment of justice. Zehr and Paul II assert that religious groups and leaders should actively engage in the pursuit of justice while also upholding the principles of respect for individuals. They emphasize the importance of restoring relationships by acknowledging and rectifying instances of injustice while remaining committed to the fundamental principles of human rights. The utilization of confession as a means to attain forgiveness is an additional method employed by religious groups and people in the pursuit of peacebuilding and reconciliation.

According to Shriver, forgiveness within a political framework is characterized as an action that combines moral integrity, patience, understanding, and a dedication to restoring a damaged human relationship. Apology and forgiveness necessitate a moral reassessment of preceding events, which inherently relies on a shared awareness and comprehension of the circumstances.

Shriver's contribution proved valuable in this study, as forgiveness emerged as a religious practice that facilitates peacebuilding and reconciliation in regions grappling with ethnic conflicts. Montville (1998) concurs with Shriver's (1995) perspective that the ultimate psychological stage in the process of reconciliation is forgiveness, wherein the victim willingly pardons past transgressions. In the context of Montville, it is important to acknowledge that victims may require a significant amount of time to articulate their forgiveness. However, it is crucial to recognize that genuine acknowledgement and remorse from the opposing party can have a constructive impact on the overall relationship between the people involved. According to Burges (1992), the act of confession is a prerequisite for forgiveness, as without confession, forgiveness cannot be attained. Similarly, the absence of forgiveness prevents the occurrence of confession.

The perspectives of Shriver, Montville, and Burges provide valuable insights for religious peacebuilders in comprehending the significance of forgiveness and confession as integral components in the process of peacebuilding and reconciliation. According to Catholic doctrine, it is asserted that individuals cannot achieve reconciliation with God unless they have first achieved reconciliation with their fellow human beings. The necessity of reconciliation between individuals prior to seeking divine reconciliation is underscored in biblical passages such as Matthew 5:23-25, Matthew 18:23-35, and 1 John 4:20. The scriptures were utilized in this study to explore the

role of the church as a mediator and reconciler between God and humanity, as well as between individuals. Powers (1994) posits that religious persons and groups exhibit a collective adherence to a fundamental set of beliefs rooted in the gospel and tradition. One of the core tenets held by individuals is a firm belief in the equality and inherent worth of every human being, along with a commitment to displaying compassion and selflessness. Powers further asserts that significant endeavours are being made to offer peacebuilding education for families, schools, and religious education programs. The aforementioned principles serve as a guiding framework for religious organizations engaged in peacebuilding and reconciliation efforts in the region of Kuresoi North. According to Appleby (2004), in regions characterized by ethnic conflict, Churches have historically played a significant role as peace players due to their distinct purpose focused on peace and reconciliation.

Appleby contends that in every crisis worldwide, there exists a presence of Christian individuals who serve as victims, defenders of human rights, educators of both children and adults and protectors of civil society against the oppressive forces of violence. The concepts presented by Appleby offer a comprehensive foundation for understanding the significant contributions made by religious peace mediators in the processes of peace establishment and reconciliation. Religion serves as the moral compass of a given society. According to Appleby (2000), religious organizations have become increasingly involved in various stages of the conflict transformation process. These organizations actively participate in peace education and conflict prevention, as well as mediation and conflict resolution. Additionally, they play a crucial role in post-settlement social reconstruction. Moreover, religious organizations contribute to the development of theoretical frameworks and cross-cultural understanding of human rights, including religious

freedom, through their engagement in academic institutions and legal systems. The concepts put forth by Appleby hold significance in the context where religious peacebuilders recognize their pivotal role in the restoration of peace and reconciliation within regions affected by ethnic conflicts.

According to Appleby (2000), religious organisations deploy several peace building tactics. These efforts encompass supporting peace agreements, creating secure environments for dialogue among conflicting parties, engaging with rebel groups, and directly assisting war victims. Nevertheless, the untapped potential of religious groups in peacebuilding and reconciliation is mostly attributed to the lack of a theological framework stated by Church leadership about the role of faith-based organizations in promoting peace. The research conducted by Appleby has contributed to the comprehension of religious methodologies in the context of peacebuilding and reconciliation within regions impacted by ethnic conflicts. According to Bartoli (2004), religious individuals involved in peace making and peace building initiatives have made significant contributions on a global scale. These individuals, representing various Christian denominations, strive to embody the principles of their faith in order to foster the development of local, regional, national, and international frameworks that promote peace.

Bartoli's perspective portrays religious individuals and groups as viable agents for fostering peace and reconciliation within regions experiencing ethnic strife. Carney (2010) asserts that the reconciliation process in Rwanda resulted in Bishop John Rucyahana observing the coexistence of Hutu and Tutsi individuals engaging in communal activities such as visiting church, worshipping, as well as working and playing together. The literature suggests that religious leaders, such as

Desmond Tutu of South Africa and John Rucyahana of Rwanda (Carney, 2010; Appleby, 2004), have demonstrated the potential for religions to promote peace and reconciliation in conflict-ridden regions, including Kuresoi North. This observation is consistent with the successful utilization of religious approaches in other nations.

According to Paul II (1999), religion plays a significant role in numerous African countries, effectively facilitating the sustenance of individuals' livelihoods and fostering optimism for a more promising future. In addition, the Church serves as a facilitator of peaceful coexistence and actively participates in the process of reconstructing the State. The Church serves as a privileged setting for the exploration and examination of the themes of reconciliation and forgiveness. The current circumstance serves as a significant reason to express joy in the Lord, as evidenced by the wonders that have been achieved in Africa during the preceding years (cf. Romans 5:3-4). Pope Paul illuminates the significant role that religious peace mediators assume in Africa's efforts towards peacebuilding and reconciliation. Several approaches mentioned above are commonly employed by various organizations, such as the National Council of Churches in Kenya (NCCCK) and the Catholic Justice and Peace Commission (CJPC), within the field of study to effectively address and mitigate conflicts. The authors have enhanced the scope of this research by finding a diverse range of religious approaches to peacebuilding and reconciliation.

Klopp (2007) highlights the involvement of the Catholic Commission of Peace and Justice in Kenya, an entity affiliated with the Roman Catholic Church, as well as the National Council of Churches of Kenya, in the facilitation of peacebuilding and reconciliation efforts within regions

affected by ethnic conflicts, such as Kuresoi North. In addition, they actively advocate for the advancement of civic education, dispute resolution, and the principles of democracy.

The representatives from the CJPC and NCKC compile comprehensive data on conflicts and related matters, which they subsequently transmit to the national office. In response, the national office provides essential provisions such as food, housing, and clothing. Religious-based organizations, despite their merits, often have obstacles in effectively addressing conflicts due to a lack of preparedness and insufficient allocation of resources and efforts towards mitigating ethnic tensions. In the majority of instances, they engage in intervention once a conflict has erupted, providing provisions such as food, housing for those displaced, clothing, and various forms of assistance. The arguments put out by Klopp contribute to the identification of the constraints inherent in religious groups' endeavours to achieve peace and reconciliation within regions affected by ethnic conflicts.

According to Powers (2011), the achievement of peace-building is contingent upon its execution through religious structures and lay organizations. According to Appleby (2010), religious social theory is a century-old corpus of literature that delves into theological reflections on matters of justice, peace, community, and the inherent worth of individuals. This body of work is firmly grounded in scriptural sources and the authoritative teachings of the Church. This material holds significant value for individuals who identify as Christians, as well as those who possess a positive disposition towards ethical behaviour. The application of approaches employed by worldwide religious groups holds the potential for promoting peace and reconciliation in Kenya, with particular relevance to the region of Kuresoi North. According to Bartoli (2005), it is said that in contemporary society, it is exceedingly difficult to identify a conflict scenario where Christian

individuals are not actively engaged in supporting victims, advocating for human rights, providing education to individuals of all ages, and safeguarding civil society against the encroachment of violence. Christianity provides a noteworthy global community of individuals. The international nature of the network facilitates the continuous movement of individuals, commodities, services, knowledge, and concepts, hence playing a crucial role in enabling contemporary peacebuilding efforts.

Religious organizations have made significant contributions to global peace-making and peacebuilding endeavours, hence warranting a sense of pride. Nevertheless, it is imperative that they consistently advocate for peace rather than solely reacting to ethnic confrontations in order to gain attention. According to Appleby (2004), the organization known as RCC has established a distinct position within the realm of Strategic Peacebuilding (SPB) through its worldwide development institutions, namely the Catholic Relief Service (CRS). The Catholic Relief Services (CRS) has undertaken various roles in its efforts to contribute to peacebuilding and conflict resolution. These roles encompass facilitating peace agreements, establishing safe spaces for dialogue between conflicting parties, engaging with rebel groups, and directly assisting war victims through initiatives such as education, training, workshops, prevention and early warning mechanisms, the establishment of institutions and peace and justice commissions, women's involvement in peacebuilding, security and peacebuilding efforts, inter-religious dialogue, business and micro-enterprise development, media and communications, development and reconstruction activities, advocacy and citizen diplomacy, higher-level diplomatic interventions, research, intervention roles, trauma healing and psychosocial work, demobilization efforts, emergency response, and post-conflict reconstruction.

The observation of Appleby provides compelling evidence that religious groups possess significant potential in fostering peacebuilding and reconciliation within regions afflicted by ethnic conflicts. Bouta et al (2005) assert that Sant'Egidio has actively engaged in peace-building efforts within numerous African nations, including but not limited to Nigeria and Cambodia. These countries, including a total of 63, have been plagued by civil conflict, with notable examples being Algeria, Burundi, the Democratic Republic of Congo, Côte d'Ivoire, Mozambique, and Sierra Leone.

According to Smock (2004), its activities have also extended to other regions such as Colombia, Guatemala, and Kosovo. The mediation efforts undertaken by Sant'Egidio in Mozambique exemplify the capacity of faith-based groups to effectively engage in conflict resolution by using their distinct set of talents. This is achieved through the establishment of a strong reputation for impartiality and empathy, as well as the strategic utilization of both their expertise and the contributions of external actors. An illustrative example is the Mozambique case, where this approach facilitated the reconciliation of conflicting groups and ultimately led to the resolution of the civil war (Bouta et al., 2005: 72-73).

The achievements of Sant'Egidio, a religious group, serve as a compelling indication that religious leaders and organizations can promote peace and reconciliation within the region of Kuresoi North. The present study examines the challenges encountered by religious groups and people in the context of peacebuilding and reconciliation efforts. As stated by Appleby (2006), a significant obstacle encountered by religious individuals and groups in the pursuit of peace-building and reconciliation lies in the inadequate comprehension and implementation of their prospective responsibilities as peacebuilders by religious leaders within the immediate community. In the

context of Appleby's analysis, it is observed that numerous religious leaders exhibit a deficiency in effectively harnessing their strategic capabilities as international actors.

According to Appleby (2006), the effectiveness of peace-building initiatives is enhanced by several factors. Firstly, peace-building efforts are more likely to succeed when they possess an international or transnational scope. Secondly, a consistent emphasis on peace and the avoidance of force in conflict resolution contribute to the success of these efforts. Lastly, fostering positive relationships between different religious groups involved in a conflict situation is crucial for their constructive involvement in the peace-building process. The ideas proposed by Appleby proved to be valuable in the study, as they provided recommendations for religious groups and individuals regarding their strategies for promoting peace-building and reconciliation in the Kuresoi North region.

Appleby (2004) identifies a significant obstacle encountered in the realm of peacebuilding, namely the insufficiency of resources. This scarcity encompasses both financial means and a shortage of clergy and volunteers. Consequently, there is a tendency to prioritize essential activities such as sacramental and pastoral endeavours over peace-building initiatives. Furthermore, this dearth of resources hampers the capacity for new undertakings and innovative approaches. Additionally, there is a lack of adequate training, limited opportunities for regional or national networking, insufficient religious or ethical education, and a notable divide between grassroots peace-building endeavours and those executed by influential individuals or groups. This perspective is also espoused by Macaulay (2013). The concept of limited resources proved to be valuable in the study, as it serves as a reminder to philanthropists to provide financial support for peace-building and reconciliation efforts in Kuresoi North. Another significant challenge arises from the absence

of appropriate peace-building instruments. The United States Institute of Peace's analysis highlights a discrepancy between the religious group's dedication to peace and the less well-defined approaches to peacebuilding, indicating a gap in knowledge and abilities. Mwagiru (2000) asserts that the role of churches in conflict management is hindered by a lack of a comprehensive theoretical framework to inform their actions. Additionally, the actors involved in conflict management lack the necessary technical expertise in conflict management terminology and fail to fully appreciate the historical context of conflicts, even though past events have a significant impact on current conflicts. Consequently, the peace-making practice employed by the individuals in question can be described, as Appleby suggests, as rudimentary, lacking coordination, and requiring professionals who possess sufficient training. Furthermore, it necessitates further investigation, experimentation, and theoretical development. These thoughts serve as a poignant reminder to religious leaders and members of the Church to enhance their dedication towards fostering peace and reconciliation in the region of Kuresoi North.

According to Macaulay (2013), peacebuilders encounter various challenges, including the apprehension of not being able to effectively address situations, concerns about potentially disturbing lay members, and a lack of clarity regarding the best course of action to take.

According to Macaulay (2013), there exists a lack of commitment among certain parish Priests, who prioritize sacramental and pastoral activities, resulting in little attention towards peacebuilding efforts. According to Macaulay, the current Church activities suffer from a deficiency in commitment, resulting in limited opportunities for the training and involvement of Church leaders in community development and peacebuilding. These pursuits are often considered less important than internally oriented endeavours. The finding made by Macaulay in this study had a crucial role

in highlighting the importance of increased dedication among religious leaders and organizations in their efforts to promote peace and reconciliation, aligning with the principles of Jesus Christ.

6.6 Political Reforms

The study sought to establish whether political reforms can aid in solving identity-based conflict. Majority of the respondents disagreed that political reforms have played a role in solving identity-based conflict as illustrated in table 6.7 with a rate of 110(73.3%) compared to those who agreed at the rate of 40 (26.7%).

Table 6. 6: Political Reforms in Solving identity-based Conflicts

Rate	Frequency(N)	Percentage
Yes	40	26.7
No	110	73.3
Total	150	100

Source: Field Data, 2021

According to the National Registration Bureau draft registration policy (GOK, 2009), the colonial government used identity cards to control the labour of Africans in Kenya for their economic interests. However, in Kenya, today National Identity Card bearing biometric features is mainly used in personal identification thereby solving identity-based conflicts. The card is also used for many benefiting transactions namely, applying for employment, university loans, registering as a voter, voting, obtaining travel documents, birth certificates, opening and closing bank accounts, accessing MPESA accounts, maintaining security of the state and registration of properties. The

national identity card is therefore considered a document used to contribute to National Security, socio-economic and political development in Kenya (GOK, 2009).

Due to the security socio-economic and political importance of ID cards citizens of Kenya upon attaining the registration age (18 years) present themselves to the registration officers in the sub-counties all over the country for registration and issuance of ID cards (GOK,1995). To operate within the law and satisfy the customers (ID card seekers) the Department of National Registration Bureau has circulated the service charter which indicates the registration requirements, services offered, cost and timelines within which such services are delivered (GOK, 2011).

6.7 Promotion of Regional Integration

Table 6. 7: Promotion of regional integration in solving identity-based conflict

Rate	Frequency(N)	Percentage
Yes	50	33.3
No	100	66.7
Total	150	100

Source: Field Data,2021

From table 6.8, the response indicates a frequency of 100(66.7%) respondents disagreeing that regional integration helped in solving identity-based conflicts. Those who agreed had a response rate of 50(33.3%) of the total respondents.

Regional integration refers to the formation of a collective entity comprising countries within a specific geographic region. The primary objective of such integration is to protect and advance the interests of its member states while adhering to predetermined agreements, treaties, and established norms. Regional integration has been regarded by certain scholars as a global occurrence involving

territorial systems that enhance interconnections among its constituents and establish novel modes of organization, alongside conventional state-led organizational structures at the national level. According to Philippe and Langenhove (2007), it is argued that the initiatives should encompass various objectives. These include enhancing trade integration within the region, establishing a conducive environment for private sector development, implementing infrastructural programs to support economic growth, fostering robust public sector institutions and good governance, reducing social exclusion and promoting the development of an inclusive civil society. Additionally, the initiatives should contribute to peace and security in the region, establish environmental programs at the regional level, and strengthen the region's interaction with other global regions (377-83). Regional integration is commonly perceived as the systematic progression wherein states within a specific geographic area enhance their degree of engagement in matters pertaining to economics, security, politics, society, and culture. The researchers reached the determination that regional integration refers to the process through which individual states within a specific geographic area come together to form a larger entity.

According to Hans and Langenhove (2003: 1-9), the level of integration is contingent upon the extent to which separate sovereign states are willing and committed to relinquishing aspects of their sovereignty. Conflict management may be described as the systematic approach aimed at minimizing the adverse consequences of conflict while simultaneously maximizing the beneficial features, ultimately facilitating the potential resolution of the dispute (Gadjanova, 2017). Conflict management encompasses the process of either resolving conflicts entirely or mitigating their effects on the communities involved (Folberg, 2015).

Biswaro (2013) and other scholars have suggested that regional groups exhibit greater efficacy in the realm of conflict management when juxtaposed with the United Nations (UN) and other international organizations. Regional organizations possess a greater degree of political familiarity, interconnectedness, and dedication to maintaining peace and security inside their respective regions, in contrast to international organizations such as the United Nations (UN). Regional bodies have the capacity to employ several techniques for conflict management and resolution. Nathan (2010) posits that conflict management encompasses various strategies, including mediation, negotiations, and potentially even the utilization of armed force.

In support of the mediation approach by regional entities, it is said that their advantage lies in their familiarity with local conflict situations, enabling them to mediate from an informed standpoint. In a similar vein, the involvement of regional entities in mediation processes is crucial due to the significant incentives they possess as primary benefactors of peace initiatives, hence enabling them to effectively address, regulate, or handle conflicts (Dheka, 2016). According to William (2013), international organizations are required to obtain permission from all members in order to engage in activities, and the process of obtaining clearance for engagement often takes a significant amount of time. This delay undermines the objective of achieving swift engagements and gains.

In a study conducted by Cloke (2015) on conflict management, the author posits that mediation emerged as a highly favoured approach for resolving conflicts. The contention put up in this instance posits that mediation affords conflict parties the ability to maintain authority over the entirety of the process, while also increasing their adaptability throughout said process. The significance of mediation is evident when it is conducted by either regional entities or international institutions. Mediation plays a crucial role in facilitating the cessation of hostilities and violence,

reducing fatalities, and ultimately achieving political settlements that are vital for effective conflict management (William, 2013). Negotiation is a process of communication and interaction between two or more parties with the aim According to Peter Wallensteen, a comprehensive understanding of many elements is essential prior to initiating the negotiating process in the context of regional conflicts. Ideological differences play a significant role in fueling the uncompromising stance of conflicting parties (Wallensteen, 2011).

In contrast, Gray (year) argues that the process of dispute negotiation conducted by regional authorities should encompass three essential components: decision analysis, structural analysis, and process analysis. In order to effectively negotiate, regional body negotiators must possess a comprehensive understanding of the underlying power dynamics at play between two contending parties. Similarly, Gray highlights the significance of decision analysis in conflict negotiations, as it operates under the assumption that the parties involved are utility maximizers. In this context, achieving a win-win outcome becomes essential, as it necessitates the ability to quantify the bargaining payoff for each party. In this context, if a negotiator lacks comprehension of the mutually beneficial viewpoints for all parties involved, it might pose challenges in effectively handling the issue (Gray, 1989). The variability in perceived utility might thus result in protracted and arduous negotiations among regional parties (ibid). In the realm of process analysis, it is vital to comprehend the contextual factors surrounding regional negotiations and their impact on the choices and decision-making processes of conflict players (Gadjanova, 2017).

The process analysis examines many stages in which negotiation behaviour and outcomes can be influenced by elements such as situational pressures, personality traits, cognitive influences, and other interaction aspects. In the context of Kenya, subsequent to the occurrence of post-election

violence in 2007-2008, the influential figure of Kofi Annan, the former Secretary General of the United Nations, exerted his influence to facilitate a consensus between the government and opposition negotiators, resulting in the establishment of a coalition government (Klaus & Mitchell, 2015). Zimbabwe implemented a comparable strategy for conflict resolution in the aftermath of disputed elections involving Mugabe and Tsvangirai. This technique was undertaken subsequent to the participation of the African Union, with Thabo Mbeki serving as the principal mediator.

6.8 Chapter Summary

This study has evaluated the challenges and opportunities of biometric modalities employed in the management identity-based conflicts in Nairobi City County. It has examined opportunities in the use of biometrics by different agencies in managing identity based conflicts. It has also examined the use of biometrics in Huduma Centers to fast track issuance of identification documents thereby curbing fraud and impersonation. It has further evaluated the level of ICT skills required for the proper use of biometrics. It has also discussed conventional methods that can be explored as opportunities in identity conflict management. The study has established that the government does not have adequate policies to regulate the use of biometrics in managing identity-based conflicts. The next chapter provides the summary, conclusions and recommendations of the study.

CHAPTER SEVEN

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter presents a summary of the findings, conclusions, and recommendations of the study. It also provides suggestions for further research.

7.1 Summary of Findings

The study was based on three main objectives which required answers to the research questions; what is the nature and extent of identity-based conflicts in Nairobi City County; To what extent are biometrics modalities effective in the management of identity-based conflicts in Nairobi City County and what challenges and opportunities are encountered through the use of biometric technology in management of identity-based conflicts in Nairobi City County?

In line with specific objective one, on what is the nature and extent of identity-based conflicts in Nairobi City County, the study found that the answers to this question were split according to the various questions designed to probe further and establish the nature and extent of identity-based conflicts in Nairobi City County. To establish the extent, the respondents were asked if they have handled conflicts at the workplace. The respondents agreed with an overwhelming response of (83.33%) that they have handled identity-based conflict cases at the workplace compared to those who negated with a response of (16.67%).

The interview question on whether the respondents who are employees fall victim to identity-based conflicts indicated an overwhelming yes response. Other than being the instruments of handling and determining identity-based conflicts, the interview response indicated that the majority of the

officers had fallen victim to these conflicts either directly or indirectly through financial institutions. The respondents were probed further on the sources of identity based conflicts handled and the occurrence. It was deduced from the response that fraud, impersonation, deceased cases and misuse of technology are identity-based conflicts handled on a daily basis. On monthly average impersonation had a response rate of 110; misuse of technology followed closely with a rate of 110, deceased cases 90 and fraud as a source with 100 of the total respondents. Political conflicts are seasonal and mostly monthly basis with a response of 105, similar to disaster and terrorism at the rate of 140 and 145 respectively.

To ascertain whether the sources of identity-based conflicts are generated by employees or the machines, the response rate was 25(16.67%) for system generated and 50(33.3%) for individuals. Both categories meaning that both machines and individuals are major causes of conflicts had a response of 75(50%) of the total respondents. The causative agents are both machine and man either created intentionally or faulty machines since complex cases of identification need proper systems and expert evaluation skills. Without both then the identification reports generated might be faulty hence causing conflicts.

To investigate the measures, the government has put in place to solve conflicts included policy making with a response of 50(30.3%), use of biometrics with 60(36.4%) and technological advancement with 55(33.3%). This report indicates that the use of biometrics in solving conflicts is the leading. Promotion of regional integration forms a basis of conventional resolution methods with a response rate of 50(33.3%) agreeing that it has helped in solving identity-based conflict whereas 100(66.7%) disagreed, that religious society played a role whereby 90(60%) of the

respondents agreed to have solved identity-based conflicts, whereas 60(40%)of the respondents disagreed.

The cases of impersonation, fraud, deceased person conflicts, election disputes, disasters and terrorism are handled differently by the government. Once cases of impersonation are identified, arrests are made with a response of 60(40%), followed by investigations by the Criminal Investigations Department with a response of 45(30%). Punishment and prosecution of officers had a response rate of 25(16.67%) and withholding identification documents with a response of 20(13.3%). Most of the identification documents producing organs do not have legal authority to prosecute perpetrators instead forward cases to the police to carry out arrests and investigations. For example, an agency like the National Registration Bureau according to the interview report revealed that once fraud cases are detected are either withheld or not issued to the persons who had applied for them then forwarded the report to DCI for investigation. Punishment and prosecution of personnel working in various state departments involved in the production of security documents involved in corruption, fraud and impersonation are handled by the police and the Courts. The entire process is dependent on each other making the prosecution and punishment low compared to arrests.

To probe whether identity-based cases that are received are solved had on overwhelming response rate of 130(86.67%) compared to those who negate with a response rate of 20(13.33%). This indicates that identification conflicts are majorly solved. When probed further to explain whether they solve problems of identity conflicts, some explained that most cases that are received are solved and those that need further probing are forwarded to the DCI to handle.

In line with specific objective two, on the extent to which biometrics modalities are effective in the management of identity-based conflicts in Nairobi City County, the study found out that fingerprints, face recognition, signature and DNA are the most employed biometrics in Kenya. The Fingerprints as a biometric modality were the highest in usage with a response of 60(40%), face recognition followed with a response rate of 30(20%), signature with 20(13.33%) whereas Iris and DNA tallied with 20(13.33%). According to Wayman (2004), it is difficult to measure error rates by use of fingerprints thereby making them effective biometrics.

The question of whether queries on personal identification are received at the workplace indicated that there are many that are received. The report indicated that they receive queries of personal identification at the workplace with a positive response rate of 130(86.67%) while 20(13.33%) objected not to have received any queries. This indicates that identification verifications are real. When probed further to explain whether they solve problems of identity conflicts, some explained that most cases that are received are solved and those that need further probing are forwarded to the DCI to handle. An overwhelming number of respondents stated that the cases received to solve identification conflicts are successful with a rate of 130(86.67%) compared to those who negate with a response rate of 20(13.33%). This indicates that identification conflicts are majorly solved. The study indicated that Huduma Centres are highly effective in the timely provision of services with a response of 70(46.67%), moderate at 50(33.33%) and less effective at 30(20%). From the response of high and moderate combined assertively agree that the system is effective in identifying and solving identity conflicts.

To investigate whether the biometric system affects the identification of persons, majority of the total respondents agreed that the quality of the biometric system affects the identification of

persons with a response of 120(80%) compared to 30(20%) who disagreed. When investigated further to explain if they agree, the respondents indicated that the quality of biometrics taken for identification must be clear and of the required standard to avoid errors and blurred biometrics which cause mismatching and wrong identification.

In line with specific objective three on the challenges and opportunities encountered through the use of biometric technology in the management of identity-based conflicts in Nairobi City County. The study found that the respondents agreed with a majority response that ICT skills affect the expert analysis of biometrics with a rate of 130(86.67%) compared to those who negated at the rate of 20(13.33%). The majority of the respondents agreed that the level of ICT skills determines the rate at which analysis of complex biometrics can be handled. ICT skill is key in advanced analysis which requires technological know-how to handle the biometrics.

Corruption is another challenge witnessed by the government in causing and solving conflicts. The response indicated that once fraud is detected it is forwarded to the Criminal Investigations Department for further probing to establish the causal network. An overwhelming 100(66.67%) of the total respondents agreed that the National Registration Bureau structure affects the timely production of identification documents whereas 50(33.3%) negated. This exclusively points out that the government structure should be reviewed as there exist long and many processes in the production of documents. This opens loopholes for more conflicts as decisions are delayed due to the processes.

When investigated further to explain if they agree on the quality of biometrics in conflicts, the respondents indicated that the quality of biometrics taken for identification must be clear and of

the required standard to avoid errors and blurred biometrics which cause mismatching and wrong identification. In cases where the biometrics were not taken of good quality, conflicts arise or there is no proper identification to be done. The study revealed and confirmed that the majority of the respondents have fallen victim to impersonation and fraud among other identity-based vices. Impersonation and fraud are majorly caused by individuals who want to get something that don't belong to them. However, the low levels of ICT skills deter the agencies involved in identification not to fully realising the cases on time and also technological advancement. Complex cases that need specific advanced queries are also not addressed on time since the level of technological advancement allows only low-level searches.

7.2 Overall Conclusion

The study established that the nature of identity-based conflicts within Nairobi City County are mainly fraud, impersonation, and misuse of technology. The study further established that misuse of technology and impersonation are reported daily with a percentage of 73.3% each followed by fraud which was at 66.7%. The study also established that biometrics modalities are the most effective in managing identity-based conflicts within Nairobi City County with a percentage of 53.3%. it further established that fingerprint biometrics is the most effective biometric modality in solving identity-based conflicts with a percentage of 40% followed by gace recognition which was at 20%. Iris, signature, and DNA came last with 13.3% each.

The study pointed out that insufficient financial resources, low level of ICT by the fingerprint officers, and inadequate policies to guide the use of biometrics are the key challenges. The study further revealed that the use and expansion of Huduma centers, and the use of other biometric modalities other than fingerprints are opportunities that should be explored.

7.3 Conclusion

In line with specific objective one, the study concludes that fraud, misuse of technology, and impersonation are the major sources of identity-based conflicts in Nairobi City County. On the other hand, other sources of identity-based conflicts that were less frequently reported include unknown deceased persons, political conflicts, disasters, and terrorism.

The government in addressing the challenges have created partnerships within agencies like the Criminal Investigations Department, National Registration Bureau, National Social Security Fund, National Hospital Insurance Fund, Independent Elections and Boundary Commission, and medical insurance schemes among others in collateral identification of sources of conflicts. Some identity-based conflicts as established in this research are machine-made due to misfeeding or taking blurred biometrics that are not clear which causes mismatching.

In line with specific objective two, fingerprints were the most effective biometrics modality used in identity-based conflicts in Nairobi City County. Other modalities used were facial recognition, DNA, iris, and signature. The study established that there are limited policies in place to guide on the use of biometrics in managing identity-based conflicts. are enough and only need technological advancement to reinforce identity-based conflicts. The long processes according to the Department of National Registration Bureau hinder the timely provision of identification processes.

In line with specific objective three, the study established that ICT skills deficit, corruption, and the structures of the National Registration Bureau hinder the use of biometrics in managing identity-based conflicts in Nairobi City County.

Overall, the study concluded that the use of biometrics albeit a wise decision by the government, its use in the management of identity-based conflicts still needs improvements and stakeholder participation to fully realize its role and solve identity-based conflicts in the country.

7.4 Recommendations

In line with specific objective one, additional research should be conducted periodically to examine the nature and extent of identity-based conflicts in Nairobi City County, tracking whether the trend is rising or dropping. Moreover, similar studies should be carried out in other major cities to determine whether the issue is unique to Nairobi or if it is also present in other urban areas.

In line with objective two, the government should advocate for the adoption of biometrics technology across various sectors of the economy to mitigate fraud and address identity-based conflicts.

In line with objective three, the government should develop strategies to address the ICT skills gap and reform the structures of the National Registration Bureau that impede the use of biometrics in managing identity-based conflicts in Nairobi City County, and take advantage of opportunities brought about by biometrics technology in improvement of government services.

The study also recommends that stakeholder consultative processes be adopted to seek further ways of strengthening existing policies on the use of biometrics in identity conflict management.

The government should install CCTV cameras within Nairobi City County for ease of personal identification and crime control, thereby, solving identity-based conflicts.

7.5 Suggestions for Further Research

From the research findings, there is a gap in the use of biometrics as the most convenient way of solving identity-based conflicts due to a lack of ICT skills that complement the advanced technological innovations in the sector. To achieve this, there must be investment in the technology of biometrics in the country in order to reduce errors and manage crime in the country. Research on other biometric modalities such as iris and retina should be enhanced in order to complement fingerprints which is the commonly used biometrics. To address this, there is need for more research on the application of all biometric modalities.

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APPENDICES

APPENDIX I: QUESTIONNAIRE FOR NGAO, NHIF, IEBC, HUDUMA CENTRE STAFF, REGISTRATION AND FINGERPRINT OFFICERS.

Dear Respondent,

I am a student at Masinde Muliro University pursuing a Master's Degree course in Peace and Conflict Studies. I am currently conducting research on the implications of biometrics technology in the management of identity-based conflict in Nairobi City County, Kenya. Your cooperation in completing this questionnaire objectively will help in making this study a success. The research is purely for academic purposes only.

Odiyo Onyango

Cell. No. 0722408576

APPENDIX II : RESPONDENT'S CONSENT FORM

I _____ hereby give my permission to **Odiyo Onyango Awuor** to respond to a questionnaire and quote my response in a scholarly research paper. I understand that his work is for academic purposes only.

I also understand the research title **Implications of Biometrics Technology in Managing Identity-Based Conflicts in Nairobi City County, Kenya.**

I also understand that this researcher will maintain my anonymity about my responses to the questionnaire.

I hereby give my permission in the form of my signature below.

Signature

Date

APPENDIX III: RESEARCH QUESTIONNAIRE

FOR NGAO, NHIF, IEBC, HUDUMA CENTRE STAFF, REGISTRATION AND FINGERPRINT OFFICERS.

Please tick where appropriate

SECTION (A): PERSONAL INFORMATION

1. Respondent's gender

Male

Female

2. Age bracket

18 – 25 years

26-33 years

34-41 years

42-49 years

50 and above years

3. Educational background

Certificate

Diploma

Degree

Post graduate

4. ICT skill level

Basic level

High skill level

None

.....
.....
.....
.....

9. Does the department have records of cases of impersonation?

Yes ()

No ()

10. Have courts prosecuted the perpetrators of cases of impersonation?

Yes ()

No ()

11. a) Have you experienced cases of fraud?

Yes ()

No ()

b) How have you dealt with such cases? Explain your answer

.....
.....
.....

12. a) In your own view has the country dealt with the cases of impersonation?

Yes ()

No ()

b) if yes, explain how

.....
.....
.....

13. What is the frequency of disputed identities of cadavers reported in your department per month?

1-5	<input type="text"/>	11-15	<input type="text"/>
6-10	<input type="text"/>	Over 16	<input type="text"/>

14. On average in terms of gender, how many disputed cadavers are reported in your department per month?

.....
.....

15. In your view do you think that identity-based conflicts normally increase during the electioneering period

Yes

No

SECTION C: EFFECTIVENESS OF BIOMETRIC MODALITIES

16. a) What are the biometric modalities that are used to solve personal identity conflicts in Kenya?

.....
.....

.....
.....
b) In your opinion, how effective is biometric modalities in solving identity based conflicts?

Most effective ()

Effective ()

Less effective ()

17. Which of the following biometric modalities do you think are the most effective in personal identification in Kenya?

Tick appropriately:

Biometrics modality	Most effective	Effective	Less effective
Iris			
Fingerprints			
Signature			
Face recognition			
DNA			
Gait			
Retina			

18. a). Do you receive verification queries on personal identification?

Yes No

b). If yes, what is the frequency of the queries per week?

1-5

11-15

6-10

16-20

19. List the agencies/stakeholders who frequently partner with NRB for identity-based conflict queries

.....
.....
.....
.....

20. a). From the queries that you receive do you manage to solve identification conflict?

Yes

No

b). If yes explain

.....
.....
.....

21. Is there a body that regulates the use of biometrics in Kenya?

Yes

No

If no, do you think there should be a regulatory body for biometrics in Kenya?.....

.....
.....

22. Tick appropriately;

What are the measures put in place to solve identity-based conflicts in Nairobi City County, Kenya?

Workplace policy ()

Use of Biometrics ()

Technological Advancement ()

23. Effectiveness of biometrics at the IEBC offices

a) Does your department use biometrics to identify its members?

Yes []

No []

b) If yes, how effective is biometrics in managing identity-based conflicts?

.....
.....
.....

24. Effectiveness of biometrics at the NHIF offices

a) Does your department use biometrics to identify its members?

Yes []

No []

b) If yes, how effective is biometrics in managing identity-based conflicts?

.....
.....
.....

**SECTION D: CHALLENGES AND OPPORTUNITIES OF BIOMETRIC MODALITIES
IN IDENTITY CONFLICT MANAGEMENT**

25. Does NRB structure affect the timely production of identification documents in Kenya?

Yes ()

No ()

26. Are the existing policies enough to make biometrics function well in the management of identity conflicts?

Yes ()

No ()

27. Suggest any three challenges that hinder effective use of biometrics in management of identity conflicts in Kenya.

a)

b)

c)

28. How effective are Huduma Centres in provision of timely Identification documents in the management of conflicts in Kenya?

High ()

Moderate ()

Less effective ()

29. a) Does quality of biometric systems affect identification of persons?

Yes

No

b). If yes explain

.....
.....
.....

30. Are the existing policies of identification in Kenya enough to manage personal identity conflicts?

.....
.....
.....

31. a). Does the level of education and ICT skills affect the expert analysis of biometric data of persons in identity conflict?

Yes No

b). If yes explain

.....
.....
.....

32. What are the recommendations that you can give to improve in biometric identification in managing personal identification conflicts in Kenya?

a)

b)

c).....

33. a) Have the religious actors/leaders played a role in solving identity based conflicts?

Yes No

b) If yes, explain how

.....

.....

.....

34. a) Has regional integration helped in solving identity based conflicts?

Yes

No

b) If yeas, explain how

.....

.....

.....

THANK YOU

.....
.....
.....

6. Do we have loopholes within the biometric identification system that aggravates conflicts?

.....
.....
.....

7. Describe the challenges the key stakeholder of identification faces in executing its functions to solve identity-based conflicts.

.....
.....
.....

APPENDIX V: OBSERVATION CHECKLIST

DATE: _____ TIME: _____

OBSERVER: MR ODIYO ONYANGO

CASE STUDY AREA: NATIONAL REGISTRATION BUREAU HEADQUARTERS

Sections of NRB where biometrics identification is applied	Biometrics modalities used	Effective resolving identity conflicts	Ineffective resolving identity conflicts
Operations (identification of dead unknown bodies)	-Fingerprints	Yes	-
AFIS (Automation of fingerprints through scanning)	-Scanners, Computers and Prints	Yes	-
Image capture (Scanning of face photographs and signature)	Photographs and signature	Yes	-
Fingerprint bureau (Manual fingerprint searches)	Fingerprints	Moderate	-
Identification report unit (Cases of Birth certificates, Banks, NSSF, passports)	Computer printout	Yes	-
Legal section(cases of fraud, impersonation, disputes court cases)	Fingerprints, photographs and signatures	Yes	-

APPENDIX VII: INSTITUTIONAL ETHICS REVIEW COMMITTEE (IERC)



MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY

Tel: 056-31375

Fax: 056-30153

E-mail: ierc@mmust.ac.ke

Website: www.mmust.ac.ke

P. O. Box 190-50100

Kakamega, Kenya

Institutional Ethics Review Committee (IERC)

Ref: MMU/COR/403012 vol2 (43)

Date: 9th September, 2019

Odiyo Onyango Awour

Masinde Muliro University of Science and Technology

P.O. Box 190-50100

KAKAMEGA

Dear Mr. Odiyo

RE: Use of Biometrics technology in the management of identity based conflicts in Nairobi County, Kenya - MMUST/IERC/068 /19

Thank you for submitting your proposal entitled as above for initial review. This is to inform you that the committee conducted the initial review and approved (with minor revisions) the above Referenced application for one year.

This approval is valid from **9th September, 2019 through to 9th September, 2020**. Please note that authorization to conduct this study will automatically expire on **9th September, 2020**. If you plan to continue with data collection or analysis beyond this date please submit an application for continuing approval to the MMUST IERC by **9th August, 2020**.

Approval for continuation of the study will be subject to submission and review of an annual report that must reach the MMUST IERC secretariat by **9th August, 2020**. You are required to submit any amendments to this protocol and any other information pertinent to human participation in this study to MMUST IERC prior to implementation.

Please note that any unanticipated problems or adverse effects/events resulting from the conduct of this study must be reported to **MMUST IERC**. Also note that you are required to seek for research permit from **NACOSTI** prior to the initiation of the study.

Yours faithfully,


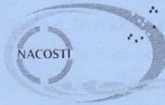



Dr. Gordon Nguka (PhD)

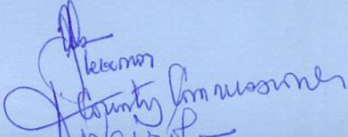
Chairman, Institutional Ethics Review Committee

Copy to:

- The Secretary, National Bio-Ethics Committee
- Vice Chancellor
- DVC (PR&I)
- DVC (A & F)

APPENDIX VIII: NACOSTI APPROVAL

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 738107	Date of Issue: 24/October/2019
RESEARCH LICENSE	
	
<p>This is to Certify that Mr.. Odiyo Awuor of Masinde Muliro University of Science and Technology, has been licensed to conduct research in Nairobi on the topic: USE OF BIOMETRICS TECHNOLOGY IN THE MANAGEMENT OF IDENTITY BASED CONFLICTS IN NAIROBI COUNTY, KENYA for the period ending : 24/October/2020.</p>	
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<p>NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.</p>	


**COUNTY COMMISSIONER
NAIROBI COUNTY
P. O. Box 30124-00100, NBI
TEL: 341666**

